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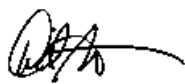
WELCOME TO THE EIGHTH VOLUME OF THE STATE OF THE INTERNET REPORT. Over the course of the last seven years, since the report was first published, the World Wide Web and the Internet have grown and evolved in significant ways. The number of Internet users has more than doubled to an estimated 3.2 billion in 2015, and while Cisco noted that the number of Internet-connected devices first outnumbered the human population in 2008, it now predicts that there will be three networked devices per capita by 2019, up from nearly two networked devices per capita in 2014. From rudimentary Internet-connected smartphones in 2008 to sensors in nearly any imaginable device in 2015, the so-called Internet of Things will continue to drive massive increases in Internet usage.

However, this explosive growth has severely strained IPv4, with the predicted exhaustion of available address space from the RIRs becoming more imminent each day. Although workarounds such as Network Address Translation and nascent markets for IPv4 addresses have extended its lifespan, the reality is that enterprises, educational institutions, and network providers need to develop IPv6 adoption plans sooner rather than later—lest they find themselves unable to obtain IPv4 address space when the need arises or unable to afford available space on the open market. On the upside, it does appear that progress is being made, as the figures at <http://www.stateoftheinternet.com/ipv6> show that many last-mile network providers have seen IPv6 adoption levels increase significantly over the last six months.

In addition, as Internet usage has grown over the last seven years, Internet connection speeds have improved as well. Within the United States, 2008 saw the Federal Communications Commission (FCC) redefine “broadband” from download speeds of 200 kbps to download speeds of 768 kbps, while in 2010, it increased the threshold to 4 Mbps down. However, in January 2015 the FCC noted that the 4 Mbps standard set in 2010 was dated and updated the broadband benchmark to 25 Mbps for downloads. While we chose to adopt the FCC’s 4 Mbps definition of broadband within the *State of the Internet Report* in 2010, we won’t be doing so with this recent redefinition. However, we will provide insight into adoption levels for connections above 25 Mbps, in addition to the insights historically provided at 4, 10, and 15 Mbps.

As noted previously, the security-related content previously found within this report is now in the stand-alone *State of the Internet/Security Report*. The First Quarter, 2015 issue includes insights into 100 Gbps+ attacks, the security implications for IPv6, website defacements and domain hijacking, and more. It can be downloaded at <http://www.stateoftheinternet.com/security-report>.

As always, if you have comments, questions, or suggestions regarding the *State of the Internet Report*, the website, or the mobile applications, please reach out to us via e-mail at [stateoftheinternet@akamai.com](mailto:stateoftheinternet@akamai.com) or on Twitter at [@akamai\\_soti](https://twitter.com/akamai_soti). You can also interact with us in the *State of the Internet* subspace on the Akamai Community at <https://community.akamai.com/>.



—David Belson

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Akamai's globally distributed Intelligent Platform™ allows us to gather massive amounts of data on many metrics, including Internet connection speeds, network connectivity/availability issues, and IPv6 adoption progress, as well as traffic patterns across leading web properties and digital media providers. Each quarter, Akamai publishes the *State of the Internet Report* based on this data.

This quarter's report includes data gathered from across the Akamai Intelligent Platform during the first quarter of 2015, covering Internet connection speeds and broadband adoption across both fixed and mobile networks, as well as trends seen in this data over time. In addition, the report includes insight into the state of IPv4 exhaustion and IPv6 adoption, Internet disruptions that occurred during the quarter, mobile browser usage trends, and observations from Akamai partner Ericsson regarding data and voice traffic growth on mobile networks.

Beginning this quarter, security-related content that was previously included in the *State of the Internet Report*, including data on attack traffic seen across the Akamai platform and insights into high-profile security vulnerabilities and attacks, is now published in a separate *State of the Internet/Security Report*. This quarterly security report provides timely information about the origins, tactics, types, and targets of cyberattacks, including quarter-over-quarter and year-over-year attack traffic trends, as well as case studies highlighting emerging cybersecurity issues. The *State of the Internet/Security Report* can be found at <http://www.stateoftheinternet.com/security-report>.

**INTERNET AND BROADBAND ADOPTION** / In the first quarter of 2015, Akamai observed a 1.2% quarterly increase in the number of unique IPv4 addresses connecting to the Akamai Intelligent Platform, growing to over 812 million—about 10 million more than were seen in the fourth quarter of 2014. Belgium remained the clear global leader in IPv6 adoption, with 33% of its connections to Akamai in the first quarter occurring over IPv6. Looking at connection speeds, the global average connection speed increased 10% quarter over quarter, to 5.0 Mbps, while the global average peak connection speed grew 8.2% to 29.1 Mbps. At a country/region level, South Korea continued to have the highest average connection speed, with a 6.3% increase from the fourth quarter to 23.6 Mbps, while Singapore—with a 17% quarterly jump to 98.5 Mbps—overtook Hong Kong as the country with the highest average peak connection speed. Globally, 4 Mbps broadband adoption grew 6.6% from the fourth quarter, and Bulgaria remained the country with the highest level of adoption at 97%. Unsurprisingly, South Korea again led the world in broadband adoption for the 10 Mbps, 15 Mbps, and 25 Mbps thresholds, with adoption rates of 77%, 58%, and 31% in each respective category. Global broadband adoption grew between 11% and 12% quarterly at each of these thresholds, reaching adoption levels of 26%, 14%, and 4.6%, respectively. Note that broadband tier references throughout this report reflect speeds greater than or equal to the specified threshold.

**MOBILE CONNECTIVITY** / In the first quarter, average mobile connection speeds (aggregated at a country/region level) ranged from a high of 20.4 Mbps in the United Kingdom—a 27% increase over the fourth quarter—to a low of 1.3 Mbps in Vietnam. Average peak mobile connection speeds ranged from 149.3 Mbps in Australia to 8.2 Mbps in Indonesia. Denmark saw 98% of unique IP addresses from mobile providers connect to Akamai at speeds above 4 Mbps, followed by Sweden and Venezuela with 97% each. On the other end of the spectrum, four countries—Vietnam, Iran, Kazakhstan, and Bolivia—each had less than 1% of IP addresses connecting at those speeds. Based on traffic data collected by Ericsson, the global volume of mobile data traffic grew by 12% between the fourth quarter of 2014 and first quarter of 2015.

Analysis of Akamai IO data collected during the first quarter from a sample of requests to the Akamai Intelligent Platform indicates that for traffic from mobile devices on cellular networks, Apple Mobile Safari accounted for roughly 35% of requests, down slightly from 36% in the fourth quarter, while Android Webkit and Chrome for mobile (the two primary Android browser bases) accounted for 23% and 16% of requests, respectively—giving a total of 39% for the Android platform. For traffic from mobile devices across all networks, Apple Mobile Safari was responsible for close to 47% of requests, down from 48% last quarter, while Android Webkit and Chrome Mobile made up just over 25% and 17% of requests, respectively, for a total of 42%.







# [SECTION]<sup>1</sup> INTERNET PENETRATION

Through its globally-deployed Intelligent Platform, and by virtue of the approximately 2 trillion requests for web content that it serves on a daily basis, Akamai has unique visibility into levels of Internet penetration around the world. In the first quarter of 2015, more than 812 million unique IPv4 addresses from 243 unique countries/regions connected to the Akamai Intelligent Platform—1.2% more unique addresses than in the fourth quarter of 2014, and 2.1% more than in the first quarter of 2014. Although we saw over 800 million unique IPv4 addresses, Akamai believes that this count represents well over 1 billion web users. In some cases, multiple individuals may be represented by a single IPv4 address (or a small number of IPv4 addresses) because they access the web through a firewall or proxy server; in other cases, individual users may have multiple IPv4 addresses associated with them, due to their use of multiple connected devices. Unless otherwise specified, the use of “IP address” within Section 1.1 refers to IPv4 addresses.

**1.1 UNIQUE IPV4 ADDRESSES** / Continuing the trend seen in the fourth quarter of 2014, the number of unique IPv4 addresses worldwide connecting to Akamai grew by nearly 10 million in the first quarter. As noted in last quarter's report, however, we expect that the number of unique global IPv4 addresses seen by Akamai may level off or decline in the future as more carriers implement carrier-grade network address translation (CGN) solutions in an effort to conserve limited IPv4 address space and as they increase support for and availability of native IPv6 connectivity for subscribers. As seen in Figure 1, among the top 10 countries in the first quarter of 2015, three countries saw a quarterly decline in unique IPv4 address counts, with Germany, Italy, and Russia showing losses of 6.7%, 3.4%, and 0.3%, respectively. The United Kingdom and Japan showed the largest quarterly gains among the top 10, at 5.7% and 5.1%, respectively.

Globally, IP address growth was similar to the fourth quarter of 2014. Nearly 70% of the countries/regions saw a quarter-over-quarter increase in unique IPv4 address counts, with 48 growing 10% or more. Of the countries/regions that saw unique IPv4 address counts decline, 15 lost 10% or more as compared with the previous quarter.

Looking at year-over-year changes among the top 10, Brazil once again saw the largest increase at 17%. Six other countries on the list saw yearly increases, ranging from Japan's 11% to Russia's 2.5%. The other three countries — Italy, the United States, and Germany — saw declines of 9.3%, 6.7%, and 4.2%, respectively. The losses seen in these countries are not indicative of long-term declines in Internet usage within these geographies but, as noted previously, are more likely related to changes in IP address management/conservation practices or increased IPv6 adoption. They may also be affected by updates to the underlying database used by Akamai for IP address geolocation.

On a global basis, two-thirds of the countries/regions around the world had higher unique IPv4 address counts year over year. Yearly growth rates of 100% or more were seen in 13 countries/regions, though 5 of them had fewer than 2,000 unique IPv4 addresses, so

small changes can result in deceptively large percentage shifts in these countries. In all, 28 countries saw yearly growth rates above 50%, while 5 countries saw IPv4 address counts decline more than 50%.

**1.2 IPV4 EXHAUSTION** / The first quarter of 2015 saw continued depletion of available IPv4 address space as Regional Internet Registries (RIRs) assigned/allocated blocks of IPv4 address space to organizations within their respective territories. A reference table translating the /nn notations used below to unique IP address counts can be found at <https://www.arin.net/knowledge/cidr.pdf>.

Leveraging data<sup>1</sup> collected by Geoff Huston, Chief Scientist at APNIC,<sup>2</sup> the *State of the Internet Report* provides a perspective on the size of the available IPv4 address pool at each RIR and how the sizes of the available pools have been shrinking over time. In addition, the report uses data provided by the individual RIRs to highlight IPv4 address space delegation activity within each region over the course of the quarter. For those interested in further detail, Mr. Huston recently published an in-depth analysis of IPv4 and IPv6 address distribution for the 2014 calendar year in his blog, *The ISP Column*.<sup>3</sup>

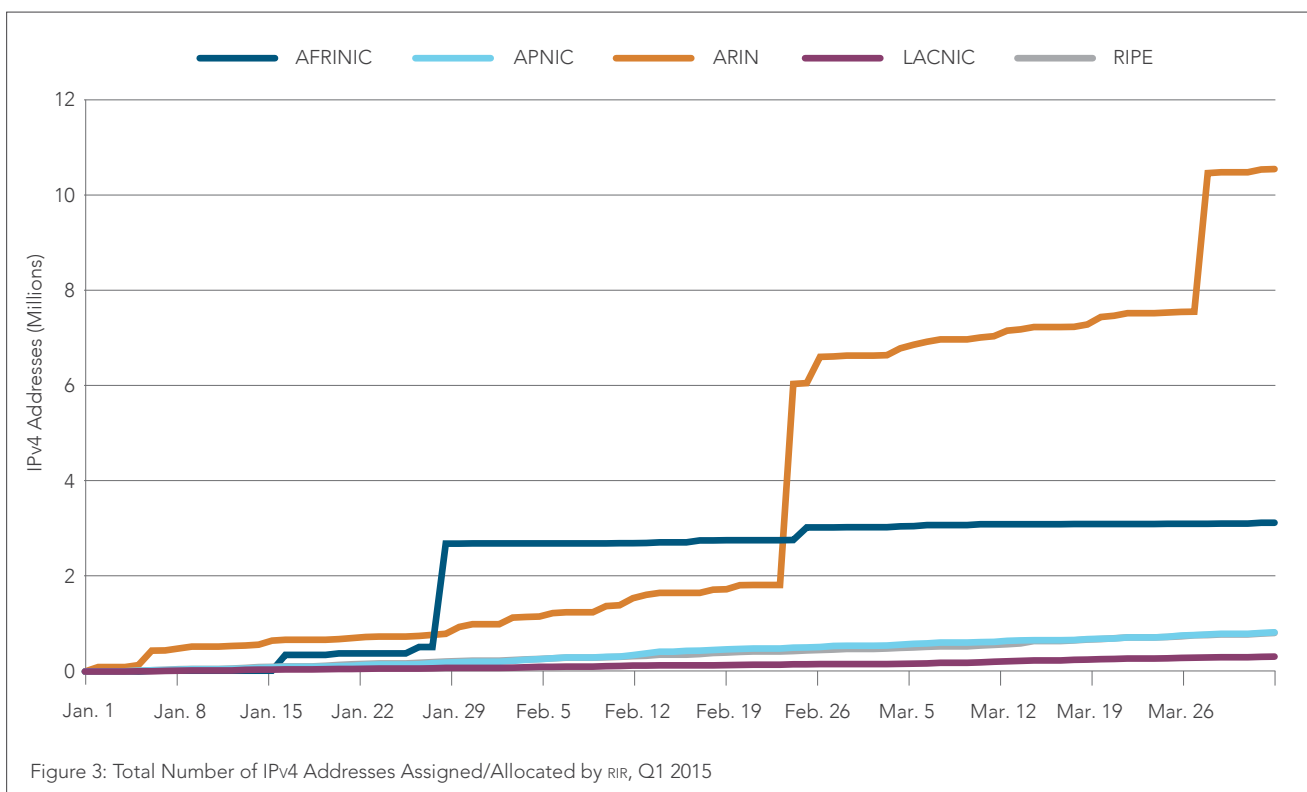
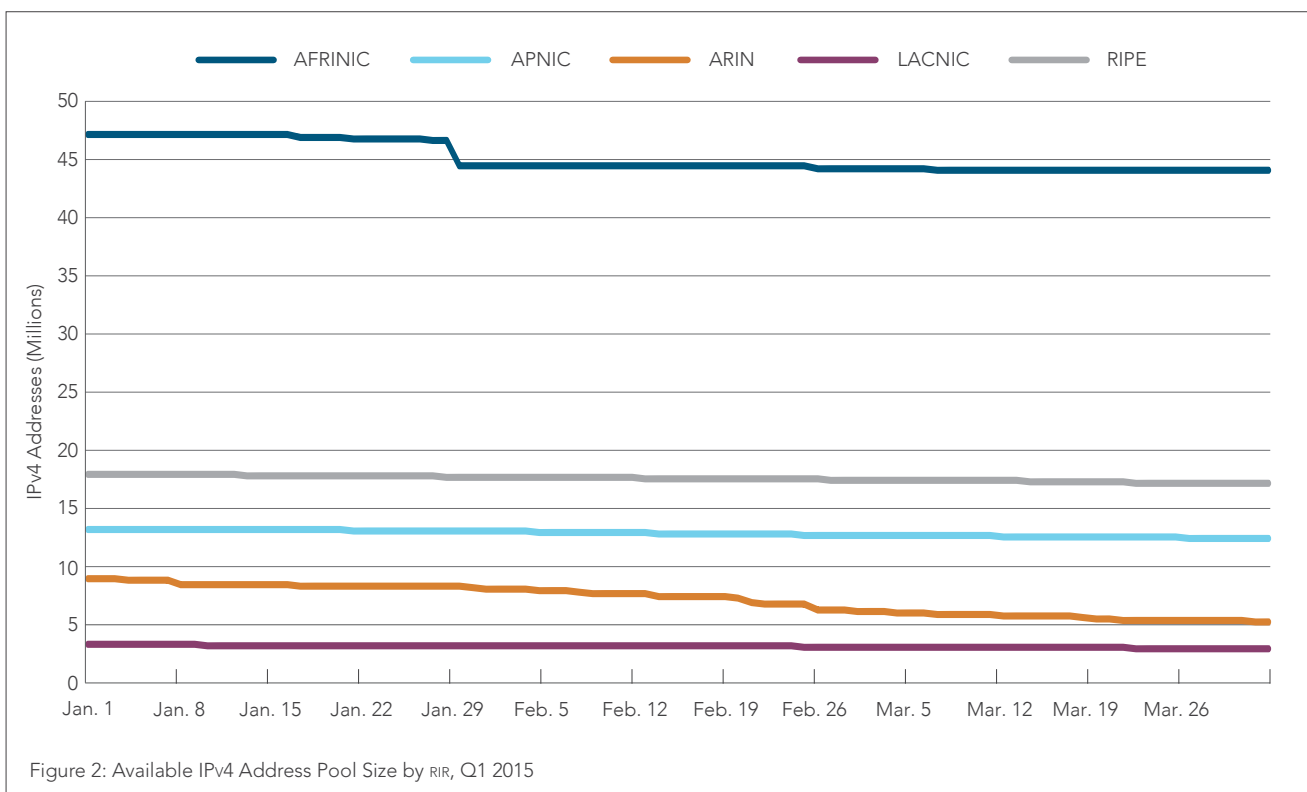
Figure 2 illustrates how the size of available IPv4 address pools at each RIR changed during the first quarter of 2015, based on data made available by Mr. Huston. Once again, ARIN showed an extremely aggressive rate of depletion, delegating more than 3.6 million IPv4 addresses — more than 40% of its available IPv4 space. LACNIC handed out slightly over 300,000 addresses, or roughly 9% of its available pool, while AFRINIC distributed 3.1 million addresses, around 7% of its available pool. APNIC and RIPE handed out roughly 800,000 addresses each, representing 6% and 4% of their available pools respectively. With just over 44 million addresses available, AFRINIC is the only RIR with a substantial pool of IPv4 addresses remaining.

LACNIC, the RIR with the smallest available pool, had only 3 million addresses left at the end of the first quarter of 2015. After approximately 1 million more addresses are delegated, LACNIC will enter the final phase of its IPv4 exhaustion plan, in which only

	Country/Region	Q1 2015 Unique IPv4 Addresses	QoQ Change	YoY Change
—	Global	812,399,653	1.2%	2.1%
1	United States	151,820,880	0.3%	-6.7%
2	China	127,097,179	1.4%	2.9%
3	Brazil	48,167,070	1.9%	17%
4	Japan	44,487,590	5.1%	11%
5	Germany	35,629,875	-6.7%	-4.2%
6	United Kingdom	30,556,750	5.7%	7.2%
7	France	29,923,918	3.9%	5.2%
8	South Korea	22,640,746	2.5%	7.9%
9	Russia	19,216,729	-0.3%	2.5%
10	Italy	18,153,681	-3.4%	-9.3%

Figure 1: Unique IPv4 Addresses Seen by Akamai





new members will be allowed to receive IPv4 addresses, and each new member can only receive a single block of between 256 and 1024 addresses.<sup>4</sup>

With only about 5 million IPv4 available addresses remaining,<sup>5</sup> North America's ARIN is already in the final phase of its four-phase plan to address IPv4 depletion. Each phase has imposed increasingly stringent qualifications for IPv4 address space requests, and to date, ARIN has been able to meet all qualifying requests. It expects that sometime within the second quarter of 2015, however, this will no longer be the case — meaning that even qualifying requests will not be fulfilled and will need to go on a waitlist.<sup>6</sup>

Figure 3 illustrates the IPv4 allocation/assignment activity across each of the RIRs during the first quarter of 2015. Overall, there was increase in activity, with roughly 25% more addresses allocated than in the fourth quarter of 2014. APNIC, RIPE, and LACNIC all saw slow, consistent delegation activity again, with no specific days during the quarter where it appeared that significant allocations were made. At AFRINIC, the largest single delegation during the first quarter was made on January 28, when a /11 was allocated to Egyptian telecommunications company Etisalat Misr.<sup>7</sup> At ARIN, two dates — February 23 and March 26 — stand out for large delegations during the first quarter. Microsoft Corporation<sup>8,9</sup> received the assignments on both dates, acquiring a /10 on the first date and a /11, /13, and /14 on the second.

**1.3 IPV6 ADOPTION** / Starting with the *Third Quarter, 2013 State of the Internet Report*, Akamai began including insight into IPv6 adoption across a number of vectors based on data gathered across the Akamai Intelligent Platform. The traffic percentages cited in Figure 4 and Figure 5 are calculated by dividing the number of content requests made to Akamai over IPv6 by the total number of requests made to Akamai (over both IPv4 and IPv6) for customer web properties that have enabled Akamai edge delivery via IPv6 — in other words, for dual-stacked hostnames. This reporting methodology provides something of a lower bound for IPv6 adoption, as some dual-stacked clients — such as Safari on Mac OS X Lion and Mountain Lion — will only use IPv6 for a portion of possible requests. While not all of Akamai's customers have chosen to implement IPv6 delivery yet, the data set used for this section includes traffic from a number of leading web properties and software providers, so we believe that it is sufficiently representative. Note that in compiling the data for the figures in this section, a minimum of 90 million total requests to Akamai during the first quarter of 2015 was required to qualify for inclusion.

A regularly updated view into the metrics discussed below can be found in the "IPv6 Adoption Trends by Country and Network" visualization on the *State of the Internet* website at <http://www.stateoftheinternet.com/ipv6>.

Figure 4 highlights the 10 countries/regions with the largest percentage of content requests made to Akamai over IPv6 in the first quarter of 2015. European countries continued to dominate, once again taking 8 of the top 10 spots. Belgium maintained its clear lead,

with one-third of content requests being made over IPv6 — more than double the percentage of second-place Germany. Portugal, with a 57% quarter-over-quarter jump in IPv6 traffic, joined the top 10 this quarter, pushing Romania off the list. As with the previous quarter, the only two non-European countries among the top 10 were the United States and Peru, both of which saw double-digit quarterly improvements and ended the quarter with 14% and 13% adoption rates, respectively. Overall, increases in IPv6 traffic were a bit weaker than in the fourth quarter. Portugal had the largest jump, followed by Greece with 24% growth, while Belgium trailed with a modest 1.7% increase. Three countries in the top 10 saw quarterly declines, ranging from 1.3% in Norway to 11% in Switzerland.

Figure 5 lists the top 20 network providers by the number of IPv6 requests made to Akamai during the first quarter. Once again, cable and wireless/mobile providers continued to drive the largest volumes of IPv6 requests, as many are leading the way for IPv6 adoption in their respective countries.

Among this group of providers, both Verizon Wireless and Brutele again saw more than half of their requests to Akamai made over IPv6, and both showed increases from the previous quarter. Telenet once again had the third-highest percentage, remaining unchanged from the fourth quarter at 49%. German carriers Kabel Deutschland, Kabel BW, and Unitymedia, and U.S. companies T-Mobile and Comcast, again had more than a quarter of their requests to Akamai over IPv6, joined this quarter by U.S. provider AT&T, whose IPv6 traffic increased from 20% in the fourth quarter to 29% in the first quarter. Joining the top 20 this quarter, Uruguay's NET Serviços de Comunicação S.A. had 2.5% of its requests over IPv6 — and was the only provider in the list to have had an IPv6 request percentage below 10%.

In addition to the increases in IPv6 traffic seen in the major carriers highlighted in this table, we have also continued to see growth in IPv6 deployment among other providers worldwide, some of which are noted in the World IPv6 Launch blog (<http://www.worldipv6launch.org/blog/>).

	Country/Region	Q1 2015 IPv6 Traffic %	QoQ Change
1	Belgium	33%	1.7%
2	Germany	16%	9.4%
3	United States	14%	16%
4	Peru	13%	18%
5	Luxembourg	11%	-3.8%
6	Switzerland	8.4%	-11%
7	Czech Republic	8.2%	17%
8	Norway	8.1%	-1.3%
9	Greece	8.0%	24%
10	Portugal	7.8%	57%

Figure 4: IPv6 Traffic Percentage, Top Countries/Regions

Country/Region	Network Provider	Q1 2015 IPv6 Traffic %
United States	Comcast Cable	27%
United States	AT&T	29%
United States	Verizon Wireless	70%
United States	Time Warner Cable	12%
Germany	Deutsche Telekom	23%
United States	T-Mobile	39%
France	Proxad/Free	21%
Belgium	Telenet	49%
Peru	Telefonica Del Peru	17%
Germany	Kabel Deutschland	41%
Japan	KDDI Corporation	22%
Malaysia	Telekom Malaysia	11%
Belgium	Belgacom	20%
Germany	Unitymedia NRW GmbH	31%
Belgium	Brutele (Voo)	64%
Portugal	Sapo	19%
Romania	RCS & RDS	13%
Uruguay	NET Serviços de Comunicação S.A.	2.5%
Germany	KabelBW	33%
Switzerland	Swisscom	17%

Figure 5: IPv6 Traffic Percentage, Top Network Providers by IPv6 Request Volume







A person with brown hair, wearing a dark jacket, is seen from the back, holding a smartphone up to take a photo of a city street at night. The street is illuminated with warm yellow and orange lights, and there are cars and buildings visible in the background. The image is overlaid with a semi-transparent blue geometric shape that contains the text.

## [SECTION]<sup>2</sup> GEOGRAPHY GLOBAL

The data presented within this section was collected during the first quarter of 2015 through Akamai's globally deployed Intelligent Platform, and includes all countries/regions that had more than 25,000 unique IPv4 addresses request content from Akamai during the quarter. Previous *State of the Internet* reports looked at connection speeds of these requests within three different threshold classifications—namely, 4 Mbps (“broadband”), 10 Mbps (“high broadband”), and 15 Mbps (“4K ready”). However, in its 2015 Broadband Progress Report, the U.S. Federal Communications Commission (FCC) increased its benchmark definition of broadband Internet service to download speeds of 25 Mbps, sharply raising the bar from the 4 Mbps definition it had set in 2010.<sup>10</sup> Given this new standard, the *State of the Internet* will now begin tracking data for the 25 Mbps threshold (in addition to the three pre-existing thresholds) in our global and U.S. data sets. For simplicity, we will now refer to each threshold by speed rather than using the stand-alone “broadband” and “high broadband” labels, as we expect that standards and definitions for such terms will continue to evolve as technology drives ever-



increasing speeds over time. Note that broadband tier references throughout this report reflect speeds greater than or equal to the specified threshold.

In addition to providing insight into adoption levels at different broadband threshold speeds, this report also includes data on average and average peak connection speeds—the latter provides insight into the peak speeds that users can likely expect from their Internet connections. (See the blog post at <http://akamai.me/sotimetrics> for more information on how these metrics are calculated.)

Traffic from known mobile networks is analyzed and reviewed in a separate section of the report. Therefore, mobile network data has been removed from the data set used to calculate the metrics in the present section, as well as subsequent regional “Geography” sections.

**2.1 GLOBAL AVERAGE CONNECTION SPEEDS** / The global average connection speed saw a 10% increase in the first quarter of 2015, increasing to 5 Mbps. As Figure 6 shows, quarterly changes were positive across the board for the top 10 countries/regions, with the exception of Hong Kong, which saw a slight 0.4% decrease from the fourth quarter of 2014. Ireland, Norway, and Finland saw the largest increases, at 37%, 24%, and 13%, respectively, while Japan saw the smallest gain at 0.4%. The remaining five countries saw modest single-digit gains over the previous quarter.

The average connection speeds among the top 10 countries/regions all remained well above 10 Mbps, and 6 of the 10 had average speeds above 15 Mbps, as Ireland, Sweden and the Netherlands joined South Korea, Hong Kong, and Japan in exceeding this benchmark in the first quarter. Globally, a total of 131 qualifying countries/regions saw average connection speeds increase from the previous quarter, with growth rates ranging from a sizeable 128% in Fiji (to 6.2 Mbps) to a modest 0.4% in Japan. Quarter-over-quarter losses were seen in only 13 qualifying countries/regions, with declines in connection speeds ranging from 0.3% in Bangladesh (to 2.1 Mbps) to 41% in Ghana (to 1.5 Mbps).

	Country/Region	Q1 2015 Avg. Mbps	QoQ Change	YoY Change
–	Global	5.0	10%	30%
1	South Korea	23.6	6.3%	0%
2	Ireland	17.4	37%	63%
3	Hong Kong	16.7	-0.4%	26%
4	Sweden	15.8	8.1%	36%
5	Netherlands	15.3	8.1%	24%
6	Japan	15.2	0.4%	4.0%
7	Switzerland	14.9	2.9%	17%
8	Norway	14.1	24%	39%
9	Latvia	13.8	6.0%	15%
10	Finland	13.7	13%	27%

Figure 6: Average Connection Speed by Country/Region

Year-over-year changes were consistently positive in the top 10, except for South Korea, which remained unchanged from the first quarter of 2014. Japan saw the smallest increase at 4%, while the remaining eight countries/regions all boasted double-digit gains, with Ireland, Norway, and Sweden all posting yearly increases of more than 30%.

On a global basis, the average connection speed increased a sizeable 30% year over year. Increases were seen in 134 qualifying countries, with growth rates ranging from 4% in Japan to 181% in Fiji. In addition to Fiji; Mongolia, Madagascar, Jersey (one of the Channel Islands located off the coast of France), Qatar and Bangladesh all saw average connection speeds more than double from the previous year. Yearly declines were seen in just 9 countries/regions, with declines ranging from 0.1% in Djibouti (to 1.0 Mbps) to 72% in Réunion (to 3.5 Mbps).

In the first quarter of 2015, only one qualifying country, Libya, had an average connection speed below 1.0 Mbps, down from four countries in the fourth quarter of 2014, underscoring the continuing trend towards faster connection speeds across all countries worldwide.

**2.2 GLOBAL AVERAGE PEAK CONNECTION SPEEDS** / In the first quarter, the global average peak connection speed saw an increase of 8.2% to 29.1 Mbps. As shown in Figure 7, average peak speeds increased across the board among the countries/regions in the top 10, led by Kuwait and Mongolia with impressive gains of 126% and 72%, respectively. These gains vaulted Kuwait and Mongolia into fourth and ninth place, respectively, pushing Uruguay and Latvia out of the top 10 in the first quarter. Among the remaining countries/regions in the list, quarterly growth rates were more modest, ranging from 1.6% in Japan to 17% in Singapore. Singapore’s gain allowed it to overtake Hong Kong as the country/region with the highest average peak connection speed at 98.5 Mbps. In

	Country/Region	Q1 2015 Peak Mbps	QoQ Change	YoY Change
–	Global	29.1	8.2%	37%
1	Singapore	98.5	17%	71%
2	Hong Kong	92.6	5.6%	40%
3	South Korea	79.0	4.7%	15%
4	Kuwait	76.5	126%	160%
5	Romania	71.6	6.8%	32%
6	Taiwan	71.5	11%	36%
7	Japan	70.1	1.6%	26%
8	Qatar	69.9	11%	113%
9	Mongolia	68.9	72%	219%
10	Israel	67.3	11%	17%

Figure 7: Average Peak Connection Speed by Country/Region

addition, all of the top 10 saw average peak speeds greater than 65 Mbps, whereas in the fourth quarter only the top 5 countries/regions surpassed this threshold.

On a global basis, 124 of the 144 qualifying countries/regions saw average peak connection speeds increase from the fourth quarter, with growth ranging from 0.2% in Puerto Rico (to 41.2 Mbps) to a sizable 126% in Kuwait. Botswana, Bahrain, and Mongolia also saw quarterly increases of over 50%. Only 20 qualifying countries/regions saw lower average peak connection speeds in the first quarter, with losses ranging from 0.1% in Djibouti (to 9.8 Mbps) to 59% in Ghana (to 7.3 Mbps).

Looking at year-over-year numbers, all of the top 10 countries/regions saw significant increases in average peak connection speeds, with Mongolia leading the group with a tremendous 219% increase over the first quarter of 2014. Kuwait and Qatar both more than doubled their average peak connection speeds, while the remaining seven countries/regions saw gains ranging from South Korea's 15% to Singapore's 71%.

Across all of the qualifying countries/regions, a total of 136 saw yearly increases in average peak connection speeds, as compared with only 106 in the previous quarter. Growth ranged from 3.9% in Kyrgyzstan (to 8.7 Mbps) to Mongolia's 219% increase. Thirteen countries in total saw year-over-year average peak connection speeds more than double. Only eight countries/regions saw a yearly decline in average peak speeds, with Réunion and Ghana experiencing the largest drops — at 59% (to 10.1 Mbps) and 55% (to 7.3 Mbps) respectively.

In the first quarter, Zambia was the country/region with the lowest average peak connection speed, reclaiming its last place position from Kenya with an average peak speed of 6.2 Mbps, up 2.0% from the fourth quarter. In addition to Kenya and Zambia, five other countries, all in Africa, saw average peak connection speeds below 10 Mbps in the first quarter.

**2.3 GLOBAL 4 MBPS BROADBAND ADOPTION** / In the first quarter, the global percentage of unique IP addresses connecting to Akamai that met the 4 Mbps broadband speed threshold increased by 6.6% to 63%, as shown in Figure 8, revealing across-the-board strength in contrast to the previous quarter's slight decline in this metric. Among the top 10 countries/regions, Malta saw the biggest gain at 7.2%, and Romania, the Netherlands, and Isle of Man all had increases in the 4% to 5% range, while the remaining six countries saw smaller quarterly increases of less than 2%.

At 97%, Bulgaria again had the highest percentage of unique IP addresses connecting to Akamai at average speeds exceeding 4 Mbps, although the remaining countries/regions in the top 10 were not far behind. All 10 met the 4 Mbps average speed threshold for at least 90% of their unique IP addresses connecting to Akamai, up from 7 in the previous quarter.

Globally, a total of 107 countries/regions qualified for inclusion for this metric, and 100 of them saw quarterly growth in 4 Mbps broadband adoption rates, up from 76 in the previous quarter. Increases ranged from 0.3% in South Africa (to 19% adoption) to 136% in Iran (to 5.9% adoption). In addition to Iran, Morocco also saw 4 Mbps broadband adoption rates more than double in the first quarter, with a 113% gain (to 12% adoption). Quarter-over-quarter declines were seen in only seven qualifying countries/regions, compared with 28 in the fourth quarter. Decreases ranged from 0.4% in Thailand (to 86% adoption) to 19% in Nepal (to 14% adoption).

Year over year, the percentage of unique IP addresses connecting to Akamai globally at average speeds of at least 4 Mbps increased 13%, up from the 7.8% growth seen in the previous quarter and reversing the downward trend of yearly growth rates that had been observed over the last several quarters. Yearly adoption rates of 4 Mbps broadband were up across all of the top 10 countries/regions, with increases ranging from just 2.1% in South Korea to 12% in Malta. The second highest yearly increase was seen in Israel, with a 9.9% gain.

Looking across all of the qualifying countries/regions, all but three saw 4 Mbps broadband adoption levels increase year over year. Growth rates ranged from 0.1% in Jamaica (to 43% adoption) to 1,402% in Algeria (to 3.3% adoption). Sri Lanka, Vietnam, and Peru also saw impressive yearly growth, increasing 588% (to 65% adoption), 575% (to 25% adoption) and 540% (to 50% adoption), respectively. In total, 28 of the 106 qualifying countries/regions saw 4 Mbps adoption rates grow 100% or more. The three countries that saw adoption rates decline were Réunion, with a 57% drop (to 30% adoption); Kenya, with a 31% drop (to 3.4% adoption); and Indonesia, with a 10% drop (to 6.0% adoption).

	Country/Region	% Above 4 Mbps	QoQ Change	YoY Change
–	Global	63%	6.6%	13%
1	Bulgaria	97%	1.3%	4.7%
2	South Korea	96%	0.6%	2.1%
3	Netherlands	95%	4.1%	7.4%
4	Israel	94%	1.4%	9.9%
5	Denmark	94%	1.2%	7.7%
6	Romania	93%	4.6%	7.0%
7	Switzerland	93%	0.4%	2.6%
8	Malta	93%	7.2%	12%
9	Isle Of Man	93%	4.0%	3.5%
10	Hong Kong	92%	1.0%	9.2%

Figure 8: 4 Mbps Broadband Adoption by Country/Region

In the first quarter, Egypt remained the country with the lowest level of 4 Mbps broadband adoption at 1.7%, despite a 21% quarterly increase and a 139% yearly increase. Venezuela, which held the last-place position earlier in 2014, remained just ahead of Egypt with a 4 Mbps broadband adoption rate of 2.1%, up 19% quarter over quarter.

**2.4 GLOBAL 10 MBPS BROADBAND ADOPTION** / As seen in Figure 9, in the first quarter of 2015, 26% of unique IP addresses globally connected to Akamai at average speeds above 10 Mbps, boosted by a quarterly increase of 11% — significantly more than the 2.9% gain seen in the previous quarter. Seven of the top 10 countries/regions saw quarter-over-quarter increases, ranging from 3.9% in Switzerland to 21% in Bulgaria. Belgium's 19% increase pulled it into the top 10 this quarter, replacing Denmark, which slipped to number 11. South Korea, Hong Kong, and Japan all showed slight quarterly declines, ranging from 2.4% to 0.1%; however, South Korea's 77% adoption rate still remains far ahead of the second-place 61% adoption rate seen in the Netherlands.

Among the 68 qualifying countries/regions for this metric, 60 saw quarter-over-quarter increases, ranging from 0.8% in Kazakhstan (to 7.1% adoption) to 248% in Kuwait (to 5.4% adoption). In addition to Kuwait, Colombia and Peru also saw adoption rates more than double, with 138% and 101% increases to 4.7% and 2.5%, respectively. Quarterly losses were seen in 8 qualifying countries/regions, with declines ranging from a negligible 0.1% drop in Japan to a 24% decline in Macao (to 22% adoption).

Looking at year-over-year changes, there was a 27% increase globally in the percentage of unique IP addresses connecting to Akamai at average speeds above 10 Mbps. South Korea and Japan saw small yearly gains in 10 Mbps broadband adoption, increasing 0.1% and 2.7%, respectively, while the other 8 countries/regions in the top 10 enjoyed far greater jumps, ranging from 30% in Switzerland to 134% in Bulgaria.

	Country/Region	% Above 10 Mbps	QoQ Change	YoY Change
–	Global	26%	11%	27%
1	South Korea	77%	-2.4%	0.1%
2	Netherlands	61%	10%	41%
3	Hong Kong	60%	-0.2%	40%
4	Romania	59%	8.4%	93%
5	Switzerland	59%	3.9%	30%
6	Japan	56%	-0.1%	2.7%
7	Bulgaria	55%	21%	134%
8	Sweden	52%	12%	55%
9	Belgium	51%	19%	47%
10	Latvia	49%	6.3%	33%

Figure 9: 10 Mbps Broadband Adoption by Country/Region

In the first quarter, all of the 68 qualifying countries/regions saw year-over-year increases in 10 Mbps broadband adoption. South Korea and Japan had the smallest gains, at 0.1% and 2.7%, but the remaining 66 countries saw sizeable increases ranging from 20% in Russia (to 33% adoption) to 972% in Colombia (to 4.7% adoption). Like the fourth quarter, a total of 28 qualifying countries/regions saw adoption rates more than double year over year.

Despite a 31% quarterly increase, China again had the lowest 10 Mbps broadband adoption rate at 1.5%. India, which had the lowest adoption rate in the third quarter of 2014, again held the second-lowest spot with a 1.8% adoption rate, despite a 60% quarter-over-quarter gain.

**2.5 GLOBAL 15 MBPS BROADBAND ADOPTION** / As Figure 10 shows, in the first quarter of 2015, 14% of unique IP addresses globally connected to Akamai at average connection speeds of 15 Mbps or above, up 12% from the fourth quarter of 2014. Despite declining for the second quarter in a row, South Korea remained the clear leader in 15 Mbps broadband adoption with a 58% adoption rate after a 4.9% quarterly decrease. The adoption rate for second-place Hong Kong also declined, falling 3.3% to 39%. Japan was the only other country/region in the top 10 to see a quarterly drop, as its adoption rate slipped 0.4% to 33%. The remaining seven countries/regions posted gains, ranging from Switzerland's 5.4% increase (to 32% adoption) to Norway's 32% jump (to 29% adoption).

Across the 55 qualifying countries/regions, China again had the lowest 15 Mbps broadband adoption rate at 0.3%, despite a significant 42% gain from the fourth quarter. Brazil and India follow closely behind, with 0.5% and 0.7% adoption rates, respectively. Overall, quarterly gains were seen in 46 qualifying countries/regions, compared with only 35 in the previous quarter. Colombia showed the biggest quarter-over-quarter increase at 98% (to 1.1% readiness), while Slovenia had the smallest rate of growth at 3.5% (to 11% readiness). The remaining nine countries/regions saw 15

	Country/Region	% Above 15 Mbps	QoQ Change	YoY Change
–	Global	14%	12%	29%
1	South Korea	58%	-4.9%	-4.2%
2	Hong Kong	39%	-3.3%	50%
3	Sweden	35%	11%	70%
4	Japan	33%	-0.4%	2.7%
5	Netherlands	33%	12%	52%
6	Switzerland	32%	5.4%	39%
7	Latvia	31%	6.5%	38%
8	Norway	29%	32%	59%
9	Lithuania	29%	11%	177%
10	Romania	28%	23%	166%

Figure 10: 15 Mbps Broadband Adoption by Country/Region

Mbps broadband adoption rates drop quarter over quarter, with losses ranging from Japan's 0.4% decline to Kazakhstan's 28% drop (to 1.9% readiness).

Year over year, the global 15 Mbps adoption rate grew 29%, with strong gains among all of the top 10— except in South Korea, which had a 4.2% decline compared with the first quarter of 2014. Lithuania and Romania again posted especially strong gains, with adoption rates jumping 177% and 166%, respectively.

When looking across all 55 qualifying countries, only South Korea saw a yearly decrease. Adoption rates for 15 Mbps broadband increased in all remaining countries, led by Qatar with a 1,180% jump. As mentioned in the *Fourth Quarter, 2014 State of the Internet Report*, Qatar's striking increase in high broadband connections is likely due to major speed upgrades implemented in October 2014 by Ooredoo Qatar, the country's primary telecommunications provider. Colombia and Chile also saw particularly large yearly gains, with increases of 740% (to 1.1% adoption) and 476% (to 1.8% adoption), respectively. Altogether, 19 countries/regions had adoption rates more than double compared with the first quarter of 2014. The continued strong yearly gains are an encouraging long-term trend and point to ongoing improvements in broadband connectivity around the world.

**2.6 GLOBAL 25 MBPS BROADBAND ADOPTION** / This quarter, for the first time, the *State of the Internet* is reporting on the percentage of unique IP addresses connecting to Akamai at average speeds of above 25 Mbps, the new benchmark broadband speed adopted by the U.S. FCC in January 2015. This data will be provided in this global overview, as well as in Section 3 on the United States.

Globally, 4.6% of unique IP addresses connected to Akamai at average connection speeds of at least 25 Mbps, a 12% increase over the previous quarter. As might be expected, the top 10 countries/regions for this metric looks very similar to the top 10 for the 15 Mbps broadband adoption metric, though the ordering is slightly

different, and this top 10 includes Norway instead of Belgium. Similar to the 10 Mbps and 15 Mbps metrics, South Korea leads the world in 25 Mbps broadband adoption, with a 31% adoption rate. Its rate was nearly double that of second-place Hong Kong, which saw adoption drop 3.8% from the fourth quarter to 17%. Hong Kong was the only country/region in the top 10 to see a quarterly decrease. The remaining nine countries/regions saw gains, led by Norway and Lithuania with 42% and 36% increases, respectively, to adoption levels of 11% and 12%. Eight of the top 10 countries/regions had 25 Mbps adoption rates above 10%, with the Netherlands and Sweden close behind at 9.8% and 9.6% adoption, respectively.

Year over year, the global 25 Mbps adoption rate grew 20%, and all of the top 10 countries/regions posted gains except South Korea, which saw a 5.9% decline compared with the first quarter of 2014. Eight of the top 10 had gains of at least 10%, led by Lithuania's astounding 271% yearly increase (to 12% adoption). Japan saw the most modest increase in the top 10, gaining 6.5% (to 13% adoption).

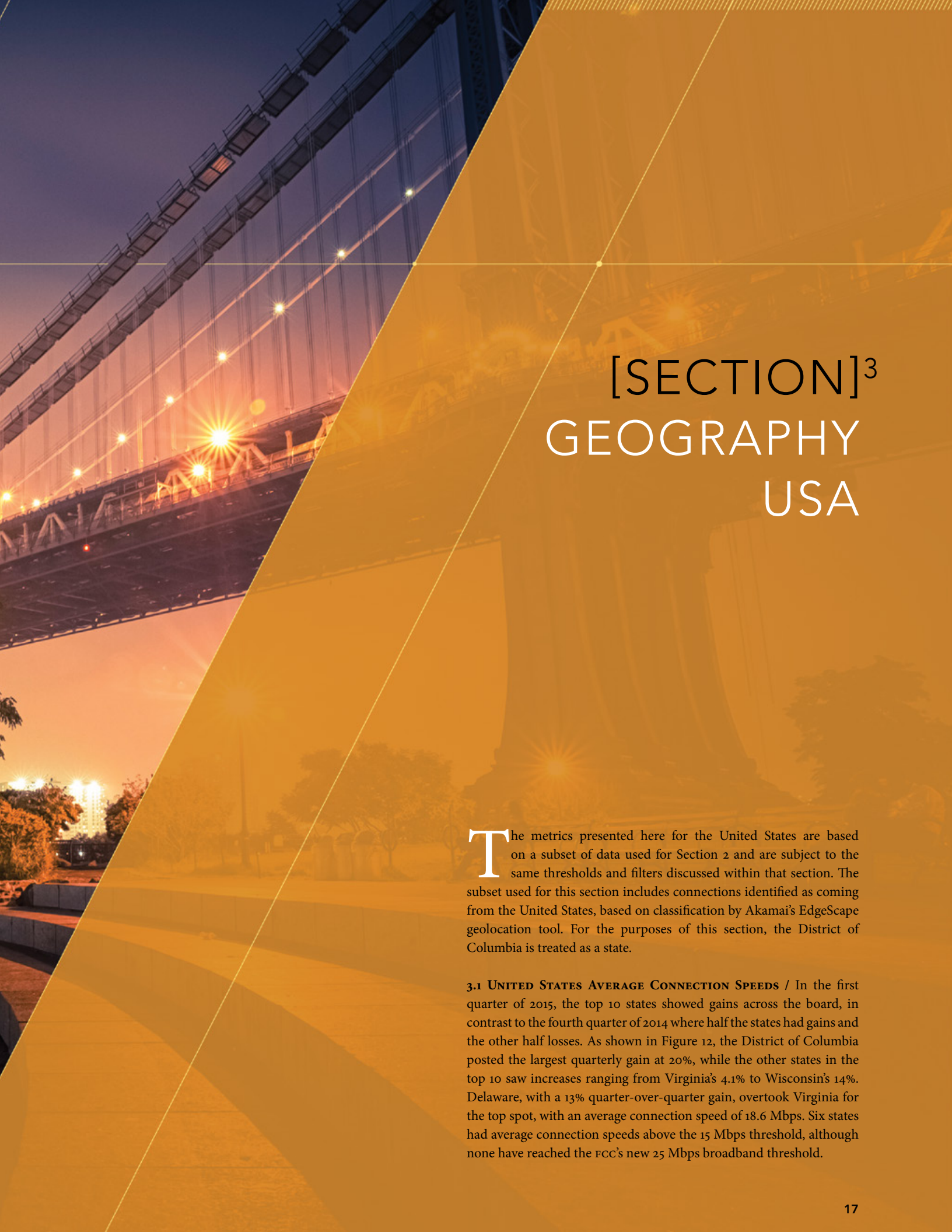
	Country/Region	% Above 25 Mbps	QoQ Change	YoY Change
–	Global	4.6%	12%	20%
1	South Korea	31%	3.9%	-5.9%
2	Hong Kong	17%	-3.8%	45%
3	Sweden	15%	9.8%	69%
4	Japan	13%	0.8%	6.5%
5	Lithuania	12%	36%	271%
6	Latvia	12%	13%	25%
7	Norway	11%	42%	60%
8	Finland	11%	24%	59%
9	Netherlands	9.8%	19%	45%
10	Switzerland	9.6%	6.9%	27%

Figure 11: 25 Mbps Broadband Adoption by Country/Region









# [SECTION]<sup>3</sup> GEOGRAPHY USA

The metrics presented here for the United States are based on a subset of data used for Section 2 and are subject to the same thresholds and filters discussed within that section. The subset used for this section includes connections identified as coming from the United States, based on classification by Akamai's EdgeScape geolocation tool. For the purposes of this section, the District of Columbia is treated as a state.

**3.1 UNITED STATES AVERAGE CONNECTION SPEEDS** / In the first quarter of 2015, the top 10 states showed gains across the board, in contrast to the fourth quarter of 2014 where half the states had gains and the other half losses. As shown in Figure 12, the District of Columbia posted the largest quarterly gain at 20%, while the other states in the top 10 saw increases ranging from Virginia's 4.1% to Wisconsin's 14%. Delaware, with a 13% quarter-over-quarter gain, overtook Virginia for the top spot, with an average connection speed of 18.6 Mbps. Six states had average connection speeds above the 15 Mbps threshold, although none have reached the FCC's new 25 Mbps broadband threshold.

Looking across all 51 states, 42 saw average connection speeds above the 10 Mbps threshold, compared with just 34 in the fourth quarter. All 51 states enjoyed positive quarter-over-quarter changes, ranging from Hawaii's 0.7% increase (to 9.1 Mbps) to Iowa's 21% jump (to 11.7 Mbps).

On a year-over-year basis, all 51 states saw higher average connection speeds compared with the first quarter of 2014, and all but two of the states saw double-digit gains. Among the top 10, Delaware again had the largest increase, with a 42% jump over the previous year. Massachusetts again had the smallest yearly increase among the top 10, at a still sizeable 18%, while Hawaii saw the smallest increase across the entire country at 8.6%. New Hampshire was the only other state in the country to see a yearly growth rate below 10%, although it came close at 9.8% (to 13.5 Mbps).

Despite a 10% quarterly increase to 8.2 Mbps, Alaska remained the state with the lowest average connection speed in the first quarter. Arkansas, Kentucky, and New Mexico again rounded out the bottom four, each with average connections speeds just below 9 Mbps.

**3.2 UNITED STATES AVERAGE PEAK CONNECTION SPEEDS** / In the first quarter of 2015, all of the top 10 states showed quarter-over-quarter growth in average peak connection speeds, as seen in Figure 13. Similar to its large quarterly increase in average connection speeds, the District of Columbia saw the largest gain in average peak connections speeds, with a 20% jump over the previous quarter, while Massachusetts saw the smallest gain at 6.3%. In total, 6 of the top 10 states had double-digit percentage quarterly increases.

Just as with average connection speeds, all 51 states across the country had higher average peak connection speeds as compared with the previous quarter. Tennessee had the smallest observed increase, at 2.7% (to 50.8 Mbps), while Kansas and the District of Columbia had the largest, both surging 20% (to 51.6 Mbps and 79.2 Mbps, respectively). An impressive 27 states grew by 10% or more in the first quarter, compared with only three states in the fourth quarter of 2014.

	State	Q1 2015 Avg. Mbps	QoQ Change	YoY Change
1	Delaware	18.6	13%	42%
2	Virginia	18.5	4.2%	34%
3	District Of Columbia	17.3	20%	35%
4	Utah	15.7	12%	30%
5	Massachusetts	15.4	8.3%	18%
6	Rhode Island	15.4	8.9%	19%
7	Washington	14.8	11%	19%
8	Oregon	14.1	9.4%	21%
9	Wisconsin	14.0	14%	21%
10	North Dakota	14.0	9.7%	19%

Figure 12: Average Connection Speed by State

Year-over-year changes were consistently positive within all 51 states as well. Among the top 10, gains were extremely robust, with increases in average peak connection speeds ranging from Washington and Rhode Island's 32% gains (to 66.4 Mbps and 70.2 Mbps, respectively) to Delaware's 65% jump (to 85.6 Mbps). Double-digit yearly growth was seen among the entire rest of the nation as well. South Carolina had the smallest increase at 18% (to 47.6 Mbps), while Missouri once again had the largest at 71% (to 54.2 Mbps).

Despite an 8.9% quarterly gain, Kentucky once again held the spot for lowest average peak connection speed in the country at 37.1 Mbps. Arkansas, which held the spot prior to Kentucky, had a 6.1% increase to 37.3 Mbps, allowing it to just edge out Kentucky in the first quarter of 2015.

Following the trend of the past few quarters, announcements made during the first quarter continued to point towards a strong likelihood of positive growth in average peak connection speeds throughout the U.S. going forward. In addition to local and state-level news, the first quarter of 2015 saw a number of developments at the national level. As previously noted, the U.S. FCC sharply raised the bar by adopting a new broadband benchmark definition of 25 Mbps—more than six times the previous standard of 4 Mbps.<sup>11</sup> The FCC tracks deployment progress against this benchmark at <https://www.fcc.gov/maps/2015-broadband-progress-report-fixed-broadband-deployment-map>. In January, President Obama also announced a number of proposals to further broadband access, including carrier incentives for rural broadband infrastructure as well as municipal and university broadband coalitions.<sup>12</sup>

At a more local level, the first quarter saw numerous announcements of new gigabit-speed Internet offerings, such as Paul Bunyan Communications' GigaZone Internet across Bemidji, Minnesota and surrounding rural areas;<sup>13</sup> Mahaska Communications Group's high-speed service to Oskaloosa and Indianola, Iowa;<sup>14</sup> upstart Ting's offerings in Westminster, Maryland;<sup>15</sup> CenturyLink's fiber-to-the-home for 505 housing developments in Utah;<sup>16</sup> and Rocket Fiber's launch in Detroit, Michigan.<sup>17</sup> In addition, Google Fiber

	State	Q1 2015 Peak Mbps	QoQ Change	YoY Change
1	Delaware	85.6	14%	65%
2	District Of Columbia	79.2	20%	54%
3	Virginia	79.0	7.5%	47%
4	Rhode Island	70.2	8.6%	32%
5	Massachusetts	69.7	6.3%	33%
6	Utah	67.9	13%	50%
7	North Dakota	66.9	8.2%	45%
8	Washington	66.4	15%	32%
9	Maryland	64.4	12%	34%
10	California	64.3	11%	47%

Figure 13: Average Peak Connection Speed by State

has continued to expand, announcing in January that it would bring gigabit-speed fiber-to-the-home to 18 additional cities in four metropolitan areas: Atlanta, Georgia; Nashville, Tennessee; and Charlotte and Raleigh-Durham, North Carolina.<sup>18</sup> In late March, Google added Salt Lake City, Utah to its list.<sup>19</sup>

At the state level, a number of initiatives were announced as well—including Massachusetts Governor Charlie Baker’s commitment of up to \$50 million in capital funding to support the expansion of broadband access throughout Western Massachusetts<sup>20</sup> and New York Governor Andrew Cuomo’s announcement that \$500 million in state funds would be offered as incentives to telecommunications companies investing in networks delivering minimum broadband speeds of 100 Mbps.<sup>21</sup>

**3.3 UNITED STATES 4 MBPS BROADBAND ADOPTION** / In the first quarter, Delaware once again continued its slow, steady march toward complete adoption of 4 Mbps broadband. As seen in Figure 14, it saw 0.3% growth towards its goal, leading the country with a 97% adoption rate. Delaware was joined by Rhode Island and Hawaii in enjoying 4 Mbps broadband adoption rates above 90%, with the other top 10 states not far behind. Nationwide, all 51 states saw quarterly growth in adoption rates, with Delaware’s being the smallest. Among the top 10 states, gains over the previous quarter were modest, Rhode Island seeing the largest increase with a 3.3% gain. Across the country, Missouri and the District of Columbia saw the largest growth, at 13% and 11% (to adoption rates of 71% and 76%), respectively. Gains in all remaining states were under 10%.

Yearly changes were positive across all 51 states as well. Connecticut saw the smallest growth in the country (and in the top 10), with a modest 2.0% gain to an 87% adoption rate. Among the top 10 states, North Dakota saw the largest increase at 9.0% (to 88% adoption), while Missouri and the District of Columbia led the nation by adding 22%, spurred in part by strong growth in the first quarter. In total, 20 states saw double-digit yearly increases in 4 Mbps broadband adoption.

	State	% Above 4 Mbps	QoQ Change	YoY Change
1	Delaware	97%	0.3%	4.6%
2	Rhode Island	96%	3.3%	3.7%
3	Hawaii	90%	1.9%	4.5%
4	North Dakota	88%	2.3%	9.0%
5	Massachusetts	88%	2.3%	6.4%
6	Connecticut	87%	2.0%	2.0%
7	New York	87%	1.5%	5.3%
8	New Hampshire	87%	1.5%	2.9%
9	South Dakota	87%	1.0%	4.8%
10	Florida	86%	2.4%	5.8%

Figure 14: 4 Mbps Broadband Adoption by State

For the sixth consecutive quarter, West Virginia remained the state with the lowest 4 Mbps broadband adoption rate, with 63% of its connections to Akamai at average connection speeds above 4 Mbps — up 8.2% from the previous quarter and up 14% from the first quarter of 2014.

**3.4 UNITED STATES 10 MBPS BROADBAND ADOPTION** / Just as it leads the country in 4 Mbps broadband adoption, Delaware once again held the top spot in 10 Mbps adoption, as shown in Figure 15. In the first quarter, nearly three-quarters of Delaware’s unique IP addresses connected to Akamai at average speeds of 10 Mbps or above, a 7.9% increase over the fourth quarter of 2014. Unlike the previous quarter’s mixed bag, in the first quarter all of the top 10 states showed healthy gains in adoption rates, with Delaware’s being the lowest and Rhode Island’s 16% gain being the highest. Once again, all of the top 10 had more than half of their unique IP addresses connecting to Akamai at average connection speeds above 10 Mbps.

Across the nation, all 51 states showed quarter-over-quarter growth in adoption rates, with Oregon having the smallest increase at 3.6% (to 50% adoption) and Kansas and West Virginia seeing the largest gains at 31% and 30%, respectively (to adoption rates of 41% and 38%). Forty-three states enjoyed double-digit gains, up significantly from just eight in the previous quarter, and 19 states in total had 10 Mbps broadband adoption rates of at least 50%.

Building on the trend of the past few quarters, yearly changes in 10 Mbps broadband adoption among the top 10 states were all strongly positive in the first quarter. Increases ranged from a low of 17% in New Hampshire to a high of 52% in Delaware. Across the country, Montana again saw the largest yearly growth rate, at 83% (to 39% adoption), while New Hampshire saw the smallest. Ten states enjoyed gains in 10 Mbps broadband adoption rates of greater than 50%.

	State	% Above 10 Mbps	QoQ Change	YoY Change
1	Delaware	74%	7.9%	52%
2	Rhode Island	71%	16%	28%
3	Massachusetts	65%	11%	20%
4	New Hampshire	61%	12%	17%
5	Connecticut	58%	12%	25%
6	New Jersey	58%	11%	22%
7	Virginia	57%	8.8%	28%
8	North Dakota	56%	9.2%	36%
9	New York	56%	12%	28%
10	Michigan	56%	13%	23%

Figure 15: 10 Mbps Broadband Adoption by State

After remaining in last place across the country for two consecutive quarters as the state with the lowest level of 10 Mbps broadband adoption, Arkansas saw a 20% quarterly jump to a 27% adoption rate, overtaking both Idaho, at 24% adoption, and Hawaii, at 26% adoption, in the first quarter. This placed Idaho as the state with the lowest level of 10 Mbps broadband adoption in the first quarter of 2015.

**3.5 UNITED STATES 15 MBPS BROADBAND ADOPTION** / After showing some volatility in the previous two quarters, the top 10 states all saw significant growth in 15 Mbps broadband adoption during the first quarter of 2015. As seen in Figure 16, all 10 states experienced double-digit percentage gains, with Connecticut and Utah leading the way with 24% increases. Virginia and Delaware saw the smallest gains, at 11% and 17%, respectively, but Delaware retained its first place position, just as it has in all of the speed and broadband adoption metrics discussed so far in Section 3.

Expanding our perspective to the full country, 50 of the 51 states posted quarterly gains, up from 40 states in the fourth quarter. Only Hawaii posted a quarterly loss, as its 15 Mbps broadband adoption levels dropped 3.4% to 7.0%. With the smallest quarter-over-quarter growth in the country, Oregon's adoption rate increased a modest 5.8% to 27%, while the remaining 49 states all posted double-digit gains. West Virginia and Alaska led the country with impressive gains of 48% and 53%, respectively, raising their 15 Mbps broadband adoption rates to 17% and 11%. In total, 21 states had at least one-quarter of their unique IP addresses connecting to Akamai at average speeds of 15 Mbps or faster.

Year over year, all 51 states saw significant increases in 15 Mbps adoption rates during the first quarter. Among the top 10 states, Delaware led the way with 68% growth, followed by the District of Columbia and Utah, both with 51% growth. The lowest yearly increase among the group was again seen in New Hampshire, which still added an impressive 27% over the previous year.

	State	% Above 15 Mbps	QoQ Change	YoY Change
1	Delaware	44%	17%	68%
2	Massachusetts	36%	21%	32%
3	Rhode Island	35%	18%	46%
4	District Of Columbia	33%	22%	51%
5	Washington	32%	18%	42%
6	New Hampshire	31%	23%	27%
7	Virginia	31%	11%	44%
8	Connecticut	29%	24%	47%
9	Utah	29%	24%	51%
10	New Jersey	29%	22%	36%

Figure 16: 15 Mbps Broadband Adoption by State

Across the nation, Montana and Wyoming both more than doubled their 15 Mbps broadband adoption rates, seeing gains of 110% and 119% over the first quarter of 2014 and boosting adoption levels to 17% and 20%, respectively. The smallest gain was seen in Hawaii, with a 12% annual growth rate, while the remaining states all grew by more than 20% over the previous year. A total of 22 states grew by more than 50% year over year.

Hawaii's quarterly loss caused it to rank in last place across the country for 15 Mbps broadband adoption in the first quarter. Kentucky, New Mexico, and Arkansas all tied for the next spot with 10% adoption rates, while Alaska, which held the last place spot the previous two quarters, moved ahead to the fifth-lowest spot with an 11% adoption rate, shared by Idaho. Still, all of these states showed significant improvements over the previous year, a hopeful sign of the continuing advancement of higher broadband speeds in the United States.

**3.6 UNITED STATES 25 MBPS BROADBAND ADOPTION** / This quarter, for the first time, the *State of the Internet* is reporting on the percentage of unique IP addresses in the United States connecting to Akamai at average speeds of above 25 Mbps, the new benchmark broadband speed adopted by the U.S. FCC in January 2015.

Although Delaware led the country in all of the other connectivity and speed metrics we have examined so far in the first quarter, the District of Columbia held the top spot in 25 Mbps broadband adoption, with 18% of its unique IP addresses connecting to Akamai at average speeds of at least 25 Mbps— a 20% increase from the fourth quarter. As seen in Figure 17, Delaware took the second-place spot with a 15% adoption rate, showing a strong 30% quarterly gain. Five of the top 10 states had adoption rates of at least 10%, and all 10 saw positive growth compared with the fourth quarter of 2014. Virginia's gain was the smallest among the top 10 at 3.7% (to 11% adoption), while Wisconsin's was the largest at 34% (to 9.0% adoption).

Across the nation, all but two states showed quarter-over-quarter growth in 25 Mbps broadband adoption rates, with Missouri and Virginia seeing the smallest gains at 3.4% and 3.7%, respectively (to

	State	% Above 25 Mbps	QoQ Change	YoY Change
1	District Of Columbia	18%	20%	39%
2	Delaware	15%	30%	81%
3	Utah	13%	27%	46%
4	Virginia	11%	3.7%	54%
5	Massachusetts	10%	18%	29%
6	Wisconsin	9.0%	34%	34%
7	Oregon	8.9%	20%	44%
8	North Dakota	8.6%	24%	26%
9	Rhode Island	8.3%	6.7%	38%
10	Maryland	8.2%	30%	22%

Figure 17: 25 Mbps Broadband Adoption by State



adoption levels of 5.1% and 11%). On the high end, Colorado and Alaska respectively gained an impressive 50% and 85% over the previous quarter, increasing their adoption rates to 6.0% and 1.7%. In total, 43 states saw double-digit gains. The only two states to see losses were Ohio and Hawaii, with drops of 54% and 20%, respectively. Note, however, that their small adoption rates (of 1.4% and 1.5%, respectively) mean that a small change in the adoption rate can result in a large percentage gain or loss.

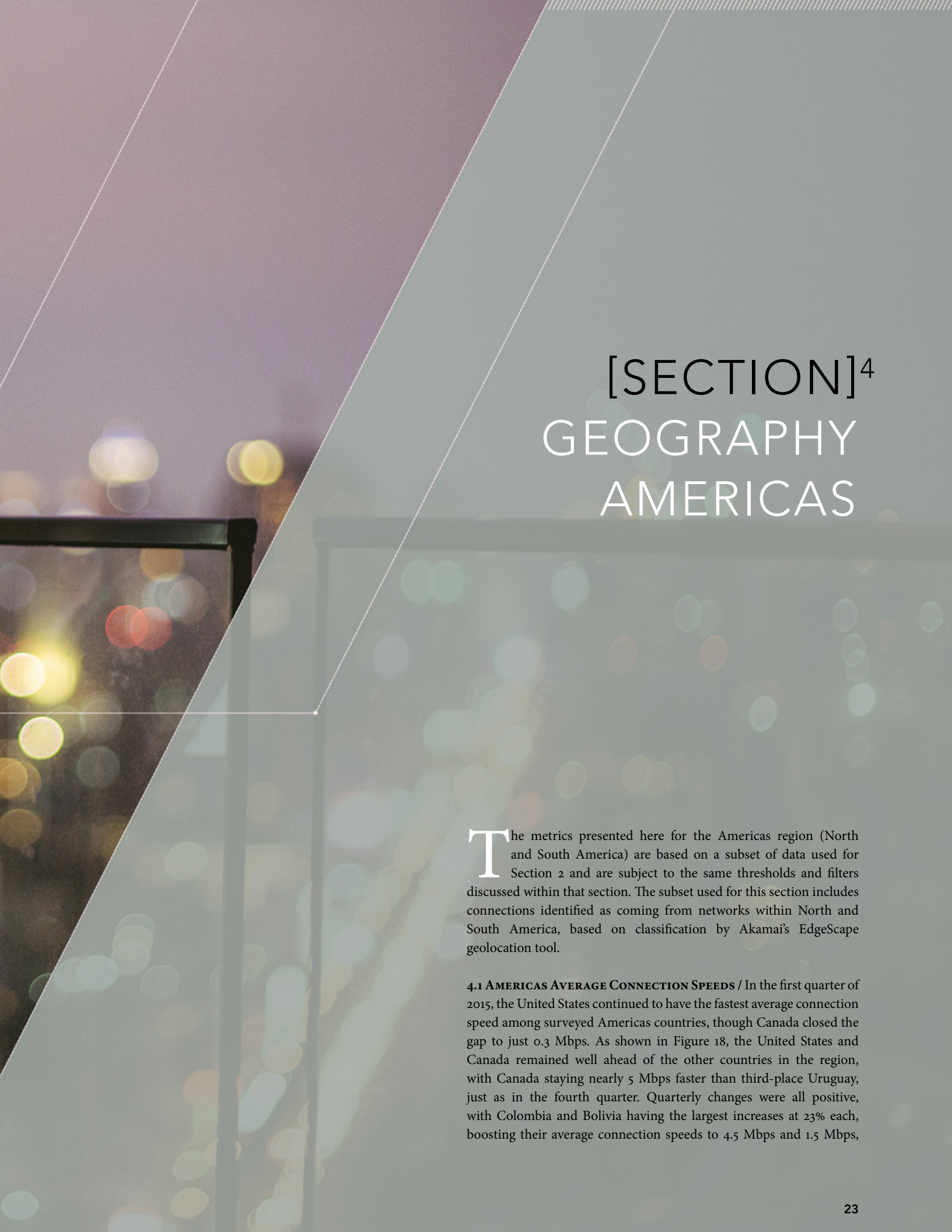
Year over year, the top 10 states all saw strongly positive growth in 25 Mbps broadband adoption rates, similar to the growth seen in the 10 Mbps and 15 Mbps categories. Increases ranged from a solid 22% in Maryland to an impressive 81% in Delaware. Across the country, all but four states saw yearly gains, led by Wyoming with an 86% jump (to 5.2% adoption). The smallest increase was seen in Washington, which grew 7.0% (to 7.6% adoption), but the remaining 45 growth states all saw double-digit increases, and 12 states had gains of at least 50%. Ohio, Georgia, Hawaii, and New Mexico all lost ground, with declines ranging from New Mexico's 2.3% (to 2.7% adoption) to Ohio's 87% (to 1.4% adoption).

Adoption rates for 25 Mbps broadband are still fairly low nationwide, with 46 states seeing levels below 10%. Ohio ranked in last place across the country with its 1.4% adoption rate, and Hawaii, Kentucky, and Alaska all had adoption rates below 2% in the first quarter as well. Seventeen states had adoption levels below 5%.









# [SECTION]<sup>4</sup> GEOGRAPHY AMERICAS

The metrics presented here for the Americas region (North and South America) are based on a subset of data used for Section 2 and are subject to the same thresholds and filters discussed within that section. The subset used for this section includes connections identified as coming from networks within North and South America, based on classification by Akamai's EdgeScape geolocation tool.

**4.1 AMERICAS AVERAGE CONNECTION SPEEDS** / In the first quarter of 2015, the United States continued to have the fastest average connection speed among surveyed Americas countries, though Canada closed the gap to just 0.3 Mbps. As shown in Figure 18, the United States and Canada remained well ahead of the other countries in the region, with Canada staying nearly 5 Mbps faster than third-place Uruguay, just as in the fourth quarter. Quarterly changes were all positive, with Colombia and Bolivia having the largest increases at 23% each, boosting their average connection speeds to 4.5 Mbps and 1.5 Mbps,

Global Rank	Country/Region	Q1 2015 Avg. Mbps	QoQ Change	YoY Change
19	United States	11.9	7.4%	13%
22	Canada	11.6	8.1%	19%
51	Uruguay	6.7	13%	55%
58	Chile	5.7	14%	75%
69	Mexico	4.9	9.7%	23%
75	Argentina	4.6	3.2%	47%
76	Colombia	4.5	23%	51%
77	Peru	4.5	12%	64%
81	Ecuador	4.1	8.5%	23%
89	Brazil	3.4	13%	29%
95	Panama	3.2	7.5%	21%
96	Costa Rica	3.0	7.2%	51%
132	Bolivia	1.5	23%	62%
136	Venezuela	1.5	3.1%	17%
137	Paraguay	1.4	5.2%	20%

Figure 18: Average Connection Speed by Americas Country

respectively. Venezuela and Argentina had the smallest gains in the first quarter, increasing 3.1% and 3.2%, respectively, to speeds of 1.5 Mbps and 4.6 Mbps.

All of the surveyed Americas countries saw strong, double-digit percentage yearly increases. Chile, Peru, and Bolivia posted the largest gains— of 75%, 64%, and 62%, respectively— while the United States saw the smallest increase at 13%. Nine of the surveyed Americas countries had an average connection speed at or above the 4 Mbps threshold— up from seven in the fourth quarter— although only the United States and Canada had speeds above the 10 Mbps broadband threshold.

While this data shows a clear trend towards improving connectivity in the region, it is also encouraging to hear news of similar efforts in countries that are not represented in this survey due to their low numbers of unique IP addresses connecting to Akamai. Cuba, for example, which currently has Internet connectivity for less than 5% of its population, recently announced its commitment to achieving 50% Internet penetration by 2020.<sup>22</sup>

**4.2 AMERICAS AVERAGE PEAK CONNECTION SPEEDS /** In the first quarter, the United States—with a 7.9% gain to 53.3 Mbps—surpassed Uruguay to take the top spot for average peak connection speeds among surveyed Americas countries, as shown in Figure 19. Despite a 19% quarterly drop (to 51.3 Mbps), Uruguay held on to second place for this metric, even though it has a significantly slower average connection speed than both the United States and Canada.

Global Rank	Country/Region	Q1 2015 Peak Mbps	QoQ Change	YoY Change
22	United States	53.3	7.9%	31%
28	Uruguay	51.3	-19%	13%
33	Canada	49.5	6.8%	24%
53	Chile	36.7	13%	76%
71	Colombia	28.7	16%	71%
74	Mexico	27.8	14%	44%
76	Peru	25.9	12%	51%
81	Argentina	24.5	4.7%	30%
82	Brazil	24.2	10%	35%
86	Ecuador	22.9	5.8%	21%
99	Panama	19.0	27%	52%
120	Costa Rica	14.6	11%	45%
127	Bolivia	12.0	18%	44%
132	Paraguay	11.5	15%	27%
134	Venezuela	10.7	-8.2%	36%

Figure 19: Average Peak Connection Speed by Americas Country

With a 6.8% quarterly gain, Canada's average peak connection speed was 49.5 Mbps—less than 2 Mbps slower than Uruguay—narrowing the 17 Mbps gap from the fourth quarter.

Besides Uruguay, Venezuela was the only other surveyed Americas country to see a quarterly decline, as its average peak connection speed fell 8.2% to 10.7 Mbps. The remaining countries all saw gains, ranging from 4.7% in Argentina to 27% in Panama. Overall, improvement was slightly stronger than in the fourth quarter, with nine countries seeing double-digit gains.

Looking at year-over-year changes, all of the surveyed countries saw positive improvement, significantly stronger overall than in the fourth quarter. Uruguay had the smallest gain at 13% while Chile had the largest at 76%. Colombia, Panama, and Peru all had yearly gains over 50% as well.

**4.3 AMERICAS 4 MBPS BROADBAND ADOPTION /** As Figure 20 shows, a significant gap in 4 Mbps broadband adoption rates persists across the qualifying Americas countries, with Canada once again leading at 87% adoption and Venezuela trailing at 2.1% adoption. As noted before, it is likely that this gap will remain quite sizable for the foreseeable future; however, all of the surveyed countries saw increases in the first quarter, with the exception of Uruguay's small 3.0% decline over the previous quarter. Gains among the qualifying surveyed countries ranged from a modest 2.3% and 2.8% in Canada and the United States to a robust 49% in Colombia. Eight of the qualifying countries had quarterly gains of more than 10%.

Year-over-year changes were all positive in the first quarter, though varying widely in magnitude. The United States and Canada once again saw the smallest increases—at 2.9% and 5.3%,

Global Rank	Country/Region	% Above 4 Mbps	QoQ Change	YoY Change
23	Canada	87%	2.3%	5.3%
43	United States	76%	2.8%	2.9%
56	Chile	62%	17%	152%
57	Uruguay	61%	-3.0%	78%
69	Mexico	53%	21%	59%
70	Peru	50%	28%	540%
72	Colombia	46%	49%	166%
75	Argentina	41%	7.4%	61%
78	Ecuador	32%	9.3%	42%
81	Brazil	31%	17%	45%
87	Panama	21%	25%	75%
91	Costa Rica	17%	22%	336%
106	Venezuela	2.1%	19%	104%
–	Bolivia	2.4%	67%	254%
–	Paraguay	1.9%	57%	273%

Figure 20: 4 Mbps Broadband Adoption by Americas Country

respectively — while all of the other countries posted gains of more than 40%. The largest yearly increases belonged to Costa Rica and Peru, which boosted 4 Mbps broadband adoption rates by an incredible 336% and 540%, respectively. Among the qualifying countries, Colombia, Chile, and Venezuela all saw year-over-year adoption rates more than double as well. These numbers are encouraging signs that broadband adoption is picking up steam among the South and Central American countries that had been lagging behind. Recent announcements, such as Brazil's new national broadband initiatives, as well as plans for the first ever fiber-optic cable directly connecting Brazil and the United States, point to continued positive developments in this region.<sup>23, 24</sup>

**4.4 AMERICAS 10 MBPS BROADBAND ADOPTION** / Though Uruguay continued to make strong progress with a 76% quarterly increase in the first quarter, it still stood 27 percentage points behind the United States and Canada, the clear leaders in 10 Mbps broadband adoption among the surveyed Americas countries. As seen in Figure 21, Canada caught up with the United States in the first quarter, jointly sharing the first-place spot with a 44% adoption rate. This marks a 12% increase from the previous quarter for the United States and a 16% increase for Canada. Brazil remained the qualifying country with the lowest adoption rate, despite a 19% quarterly increase (to 2.2% adoption). Only Argentina saw a quarterly decrease, with a small 3.6% drop in adoption levels, while the rest of the qualifying countries posted gains— ranging from 12% in the United States to 101% in Peru and 138% in Colombia.

From a yearly perspective, all of the surveyed countries in the region showed strong gains, with the United States again seeing the most modest increase at 22%. Canada had the next smallest increase at 40%, while the remaining eight qualifying countries

Global Rank	Country/Region	% Above 10 Mbps	QoQ Change	YoY Change
17	United States	44%	12%	22%
18	Canada	44%	16%	40%
43	Uruguay	17%	76%	289%
51	Chile	9.1%	56%	723%
56	Argentina	7.1%	-3.6%	257%
59	Colombia	4.7%	138%	972%
60	Mexico	4.7%	33%	108%
64	Ecuador	3.3%	34%	134%
66	Peru	2.5%	101%	858%
67	Brazil	2.2%	19%	132%
–	Panama	1.1%	19%	111%
–	Costa Rica	0.9%	23%	89%
–	Venezuela	0.2%	19%	188%
–	Bolivia	0.2%	64%	191%
–	Paraguay	0.1%	51%	378%

Figure 21: 10 Mbps Broadband Adoption by Americas Country

posted yearly gains greater than 100%. Colombia once again led the group with an astonishing 972% gain, followed by impressive increases of 858% and 723% by Peru and Chile, respectively.

**4.5 AMERICAS 15 MBPS BROADBAND ADOPTION** / As Figure 22 shows, nearly half of the surveyed countries in the Americas region again failed to qualify for inclusion in the 15 Mbps broadband adoption metric in the first quarter. Just as with the other broadband adoption metrics we have examined so far, the United States and Canada continued to have adoption levels well above those seen in

Global Rank	Country/Region	% Above 15 Mbps	QoQ Change	YoY Change
18	United States	22%	18%	31%
21	Canada	20%	22%	52%
40	Uruguay	4.4%	39%	140%
48	Chile	1.8%	30%	476%
50	Argentina	1.2%	-4.9%	227%
51	Mexico	1.2%	22%	64%
52	Colombia	1.1%	98%	740%
54	Brazil	0.5%	9.7%	54%
–	Ecuador	0.7%	35%	65%
–	Peru	0.5%	116%	673%
–	Costa Rica	0.4%	13%	40%
–	Panama	0.3%	14%	84%
–	Venezuela	0.1%	34%	307%
–	Bolivia	0.1%	79%	224%
–	Paraguay	<0.1%	5.9%	260%

Figure 22: 15 Mbps Broadband Adoption by Americas Country

the remaining countries. Both saw substantial growth in the first quarter of 2015, increasing their adoption rates by 18% and 22% to 22% and 20%, respectively. Despite a 39% quarterly increase, Uruguay followed a distant third, with a 4.4% adoption rate, while the remaining qualifying countries all had less than 2% of their unique IP addresses connect to Akamai at speeds above 15 Mbps. Only one country, Argentina, posted a quarterly loss, with a 4.9% decline, while the other seven qualifying countries saw increases, ranging from 9.7% in Brazil to 98% in Colombia.

Looking at year-over-year numbers, all of the surveyed Americas countries showed very strong positive growth rates. Among the qualifying countries, gains ranged from 31% in the United States to an impressive 740% in Colombia. Similar to the fourth quarter, Chile, Argentina, and Uruguay also saw readiness rates more than double from the previous year, with increases of 476%, 227%, and 140%, respectively. Note, however, that in cases of very low readiness rates, even small shifts in the underlying data can appear as large percentage changes. Still, the observed long-term trends across the surveyed Americas countries are extremely encouraging and point to improved availability and adoption of high-speed Internet connectivity across the region over time.














# [SECTION]<sup>5</sup> GEOGRAPHY ASIA PACIFIC (APAC)

The metrics presented here for the Asia Pacific region are based on a subset of data used for Section 2 and are subject to the same thresholds and filters discussed within that section. The subset used for this section includes connections identified as coming from networks in the Asia Pacific region, based on classification by Akamai's EdgeScape geolocation tool.

**5.1 ASIA PACIFIC AVERAGE CONNECTION SPEEDS** / As shown in Figure 23, South Korea remained the clear leader in both in the Asia Pacific region and worldwide as the country/region with the highest average connection speed to Akamai. Its observed connection speeds gained 6.3% in the first quarter, recovering some of its 12% loss from the fourth quarter of 2014 and widening its lead over second-place Hong Kong to nearly 7 Mbps, up from 5.5 Mbps in the fourth quarter. Only two surveyed countries/regions saw quarterly losses, both extremely small: Taiwan fell 0.8% to 10.5 Mbps, and Hong Kong lost 0.4% to 16.7

Mbps. Average connection speeds in the remaining countries gained anywhere from 0.4% in Japan to 19% in Vietnam as compared with the fourth quarter.

Ten of the 15 surveyed Asia Pacific countries/regions had average connection speeds above the 4 Mbps broadband threshold, and five of these exceeded the 10 Mbps threshold. Indonesia, at 2.2 Mbps, once again just edged out India, at 2.3 Mbps, as the surveyed country with the lowest average connection speed in the region, though both countries posted quarterly gains.

Looking at year-over-year changes across the Asia Pacific region, only one country, Indonesia, saw a decline, due in large part to an unexpectedly large quarterly loss mentioned in the fourth quarter. South Korea saw no change compared with the first quarter of 2014, but the remaining 13 surveyed countries all saw growth in average connection speeds. Japan's 4% increase was fairly modest, but the other countries all saw double-digit growth, ranging from 17% in China to 71% in Sri Lanka. Over the upcoming quarters, it will be interesting to see whether China shows stronger growth in connection speeds as it reaps the benefits of recent infrastructure upgrades: seven new peering points were deployed in late 2014 to relieve congestion and boost speeds throughout the country's core Internet infrastructure.<sup>25</sup>

**5.2 ASIA PACIFIC AVERAGE PEAK CONNECTION SPEEDS /** In the first quarter, Hong Kong and Singapore were once again the clear leaders in average peak connection speeds among both the surveyed Asia Pacific countries/regions and the world. As seen in Figure 24, both countries now have average peak speeds exceeding 90 Mbps, a noticeable increase from the fourth quarter. South Korea, the next closest contender, posted an average peak speed of 79 Mbps. In a stronger showing than the fourth quarter, all but one of the

surveyed countries saw quarter-over-quarter increases in average peak speeds during the first quarter. These gains ranged from a slight 1.6% in Japan to a robust 31% in Indonesia. The Philippines posted the only decline, with a 7.4% drop from the fourth quarter.

Year-over-year changes in the Asia Pacific region were mostly strong as well, with Indonesia posting the only loss, a 9.6% decline from the previous year, again due mostly to a large, unexplained drop in the fourth quarter of 2014. The other 14 countries all saw gains over the first quarter of 2014, ranging from 8.1% in the Philippines to 97% in Sri Lanka. Eleven countries had yearly growth rates greater than 25%, and four of those grew more than 50%.

**5.3 ASIA PACIFIC 4 MBPS BROADBAND ADOPTION /** Unsurprisingly, South Korea again led the region in 4 Mbps broadband adoption, with 96% of its IP addresses connecting to Akamai at average connection speeds above this threshold, as shown in Figure 25. Just as in the fourth quarter, seven of the surveyed countries/regions in Asia Pacific enjoyed 4 Mbps broadband adoption rates of 80% or higher, while—in sharp contrast—the Philippines, India, and Indonesia all had adoption levels of 10% or less. Indonesia again saw the lowest adoption rate this quarter at 6.0%, despite a 31% gain from the fourth quarter. Thailand was the only country/region to see a quarter-over-quarter decline, though it fell only a negligible 0.4%. Quarterly increases ranged from South Korea's modest 0.6% to Sri Lanka's strong 44%.

With the exception of a 10% decline in Indonesia, year-over-year changes in the other surveyed Asia Pacific countries/regions were positive, with increases running the gamut from a minimal gain of 2.1% in South Korea to incredible jumps of 575% and 588% in Vietnam and Sri Lanka, respectively. India and the Philippines

Global Rank	Country/Region	Q1 2015 Avg. Mbps	QoQ Change	YoY Change
1	South Korea	23.6	6.3%	0%
3	Hong Kong	16.7	-0.4%	26%
6	Japan	15.2	0.4%	4.0%
12	Singapore	12.9	11%	54%
23	Taiwan	10.5	-0.8%	18%
40	New Zealand	8.4	14%	50%
42	Australia	7.6	3.7%	28%
45	Thailand	7.4	4.2%	43%
73	Sri Lanka	4.8	12%	71%
78	Malaysia	4.3	4.7%	22%
84	China	3.7	7.6%	17%
94	Vietnam	3.2	19%	57%
104	Philippines	2.8	5.0%	35%
115	India	2.3	11%	31%
117	Indonesia	2.2	15%	-8.8%

Figure 23: Average Connection Speed by APAC Country/Region

Global Rank	Country/Region	Q1 2015 Peak Mbps	QoQ Change	YoY Change
1	Singapore	98.5	17%	71%
2	Hong Kong	92.6	5.6%	40%
3	South Korea	79.0	4.7%	15%
6	Taiwan	71.5	11%	36%
7	Japan	70.1	1.6%	26%
29	Thailand	50.6	9.3%	47%
47	Australia	40.8	10%	29%
52	New Zealand	36.7	7.0%	51%
65	Malaysia	31.5	6.3%	13%
66	Sri Lanka	30.8	24%	97%
92	Vietnam	21.3	23%	74%
94	Philippines	20.3	-7.4%	8.1%
97	China	19.4	8.8%	43%
106	Indonesia	17.5	31%	-9.6%
108	India	17.4	20%	45%

Figure 24: Average Peak Connection Speed by APAC Country/Region



Global Rank	Country/Region	% Above 4 Mbps	QoQ Change	YoY Change
2	South Korea	96%	0.6%	2.1%
10	Hong Kong	92%	1.0%	9.2%
14	Japan	89%	1.4%	3.9%
17	Taiwan	89%	2.9%	25%
27	Thailand	86%	-0.4%	42%
28	New Zealand	86%	6.6%	44%
33	Singapore	84%	3.8%	15%
50	Australia	71%	4.1%	29%
54	Sri Lanka	65%	44%	588%
73	Malaysia	43%	8.4%	30%
79	China	32%	19%	29%
85	Vietnam	25%	36%	575%
98	Philippines	10%	3.4%	144%
99	India	9.9%	27%	101%
101	Indonesia	6.0%	31%	-10%

Figure 25: 4 Mbps Broadband Adoption by APAC Country/Region

saw adoption levels more than double as well, while seven other countries/regions posted double-digit growth compared with the previous year.

**5.4 ASIA PACIFIC 10 MBPS BROADBAND ADOPTION** / As shown in Figure 26, South Korea once again led the region and the world in 10 Mbps broadband adoption, despite a 2.4% decrease from the fourth quarter. Its 77% adoption rate was still 17 percentage points ahead of Hong Kong, the closest contender in the Asia Pacific region. Among the qualifying countries/regions, China and India again had the lowest adoption rates at 1.5% and 1.8%, though they posted sizeable quarterly gains of 31% and 60%, respectively. Like the fourth quarter, changes in adoption levels were mixed, with four qualifying countries/regions seeing declines and seven seeing increases. Losses were small among the qualifying countries, ranging from Japan's 0.1% to Taiwan's 4.8% — a minor pull back after its 52% gain in the fourth quarter. Gains were more varied, ranging from Malaysia's small 2.6% increase to India's sizeable 60%.

Year-over-year changes were positive across all qualifying Asia Pacific countries/regions with the exception of China, although South Korea and Japan both saw very small increases of 0.1% and 2.7%, respectively. The remaining countries posted more robust gains, ranging from China's 22% to Thailand's 240%. New Zealand, India, and Singapore also saw their 10 Mbps broadband adoption rates more than double compared with the previous year.

Global Rank	Country/Region	% Above 10 Mbps	QoQ Change	YoY Change
1	South Korea	77%	-2.4%	0.1%
3	Hong Kong	60%	-0.2%	40%
6	Japan	56%	-0.1%	2.7%
14	Singapore	47%	16%	120%
24	Taiwan	35%	-4.8%	36%
41	New Zealand	21%	38%	177%
44	Australia	17%	8.8%	60%
46	Thailand	14%	8.1%	240%
63	Malaysia	3.8%	2.6%	46%
68	India	1.8%	60%	135%
69	China	1.5%	31%	22%
–	Sri Lanka	1.5%	-19%	475%
–	Philippines	0.6%	2.1%	109%
–	Vietnam	0.4%	13%	380%
–	Indonesia	0.4%	39%	15%

Figure 26: 10 Mbps Broadband Adoption by APAC Country/Region

**5.5 ASIA PACIFIC 15 MBPS BROADBAND ADOPTION** / Given its substantial lead in the 4 Mbps and 10 Mbps broadband adoption metrics, it is not surprising that South Korea was also the clear global and regional leader in 15 Mbps broadband adoption. As seen in Figure 27, 58% of the unique IP addresses from South Korea made requests to Akamai at average speeds of 15 Mbps or higher, a 4.9% decline from the fourth quarter. Second-place Hong Kong saw a 3.3% decrease in the first quarter to 39% adoption, still 19 percentage points below South Korea's level. Two other qualifying countries/regions in the region saw declines as well — Japan with a 0.4% drop

Global Rank	Country/Region	% Above 15 Mbps	QoQ Change	YoY Change
1	South Korea	58%	-4.9%	-4.2%
2	Hong Kong	39%	-3.3%	50%
4	Japan	33%	-0.4%	2.7%
14	Singapore	24%	18%	189%
24	Taiwan	15%	-11%	10%
37	Australia	6.9%	6.1%	57%
38	New Zealand	6.9%	47%	201%
41	Thailand	4.4%	16%	272%
53	India	0.7%	66%	112%
55	China	0.3%	42%	41%
–	Malaysia	1.0%	4.7%	52%
–	Sri Lanka	0.4%	-32%	182%
–	Philippines	0.2%	13%	100%
–	Indonesia	0.1%	30%	40%
–	Vietnam	0.1%	19%	188%

Figure 27: 15 Mbps Broadband Adoption by APAC Country/Region

and Taiwan with an 11% decrease. The remaining six qualifying countries/regions saw increases ranging from 6.1% in Australia to 66% in India. Though India and China both saw sizeable quarterly increases, they remained in the bottom two places for 15 Mbps broadband adoption among qualifying surveyed Asia Pacific countries/regions, with adoption levels below 1%.

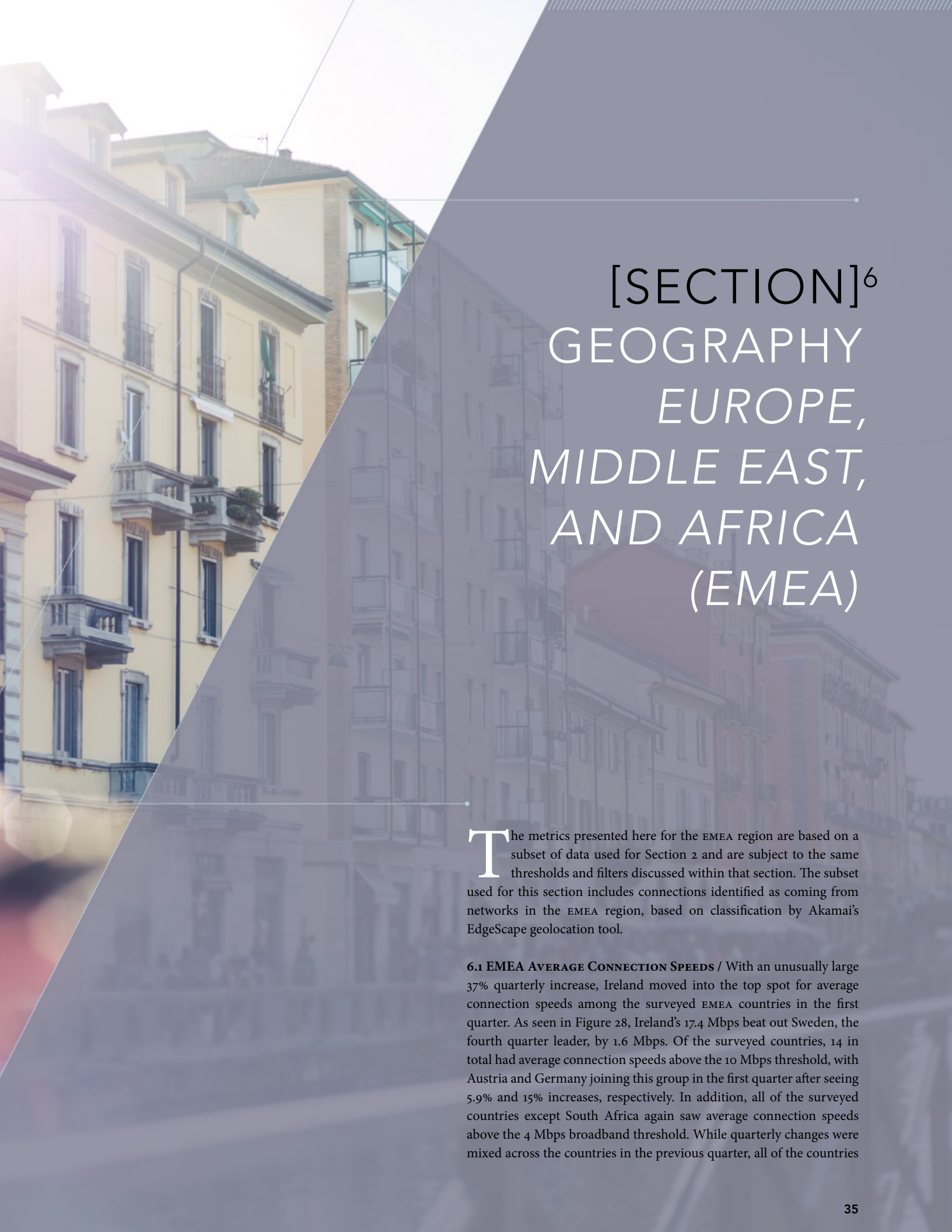
Year-over-year changes in the 15 Mbps broadband adoption metric were positive across the board for qualifying Asia Pacific countries/regions with the exception of South Korea, which saw a modest 4.2% drop. The remaining nine countries saw yearly increases ranging from a mere 2.7% in Japan to an impressive 272% in Thailand. New Zealand, Singapore, and India joined Thailand in seeing adoption levels more than double compared with the previous year.

As has been noted previously, the observed long-term trends are extremely encouraging and point to improved availability and adoption of high-speed Internet connectivity across the Asia Pacific region over time. The countries in this region are also among the world leaders in Internet speeds and have continued to push the envelope in this regard. In the first quarter, both Hong Kong's HKT and Australia's NBN Co revealed plans to enable speeds of up to 10 Gbps on their networks. HKT's service— which will be available to more than 80% of the homes in Hong Kong— is currently being piloted, with a commercial launch planned for the third quarter, while NBN Co plans to upgrade its Telstra and Singtel-Optus cable networks with 10 Gbps-capable technology for 2017.<sup>26, 27</sup>









# [SECTION]<sup>6</sup> GEOGRAPHY *EUROPE, MIDDLE EAST, AND AFRICA (EMEA)*

The metrics presented here for the EMEA region are based on a subset of data used for Section 2 and are subject to the same thresholds and filters discussed within that section. The subset used for this section includes connections identified as coming from networks in the EMEA region, based on classification by Akamai's EdgeScape geolocation tool.

**6.1 EMEA AVERAGE CONNECTION SPEEDS** / With an unusually large 37% quarterly increase, Ireland moved into the top spot for average connection speeds among the surveyed EMEA countries in the first quarter. As seen in Figure 28, Ireland's 17.4 Mbps beat out Sweden, the fourth quarter leader, by 1.6 Mbps. Of the surveyed countries, 14 in total had average connection speeds above the 10 Mbps threshold, with Austria and Germany joining this group in the first quarter after seeing 5.9% and 15% increases, respectively. In addition, all of the surveyed countries except South Africa again saw average connection speeds above the 4 Mbps broadband threshold. While quarterly changes were mixed across the countries in the previous quarter, all of the countries

posted gains in average connection speeds in the first quarter. Increases ranged from 2.9% in Switzerland to 37% in Ireland, with 10 surveyed countries seeing double-digit percentage quarterly gains. In the previous quarter, only one country gained more than 10%.

Year-over-year changes in average connection speeds were again consistently positive for EMEA and stronger overall than in the fourth quarter. Austria and Russia saw the smallest increases at 10% each, while the United Arab Emirates and Ireland posted the largest gains, at 47% and 63%, respectively. Fifteen surveyed countries saw gains of at least 25% compared with the previous year. Across the EMEA region, these highly positive long-term growth trends have continued to point to ongoing improvements in Internet connectivity within the surveyed countries.

**6.2 EMEA AVERAGE PEAK CONNECTION SPEEDS** / As shown in Figure 29, the first quarter saw stronger growth in average peak connection speeds across the EMEA countries as compared with the fourth quarter of 2014. The United Arab Emirates had the only decline, losing 18% — after a significant 54% gain in the previous

quarter. Increases among the remaining countries ranged from Belgium's 3.6% to Norway's 22%. Twelve of the surveyed EMEA countries had average peak connection speeds above 50 Mbps, a sizeable increase from eight in the fourth quarter. Due to its 18% decline, the United Arab Emirates dropped out of the 50 Mbps group in the first quarter, but Russia, Finland, Norway, the United Kingdom, and Hungary all joined the ranks. Several other countries were not far behind and could easily join this group in upcoming quarters. Romania held its spot as the regional leader, with an average peak connection speed of 71.6 Mbps, while South Africa continued to trail the pack at 16.8 Mbps, just over half the speed of the next-lowest country, Italy.

Once again, year-over-year changes for the surveyed countries in the EMEA region were consistently positive. Israel, with a 17% increase, saw the smallest yearly growth in the first quarter, while South Africa, with a 68% gain, once again saw the largest. The remaining countries posted increases between 20% and 57%, indicating strongly positive trends for peak Internet connection speeds in the region.

Global Rank	Country/Region	Q1 2015 Avg. Mbps	QoQ Change	YoY Change
2	Ireland	17.4	37%	63%
4	Sweden	15.8	8.1%	36%
5	Netherlands	15.3	8.1%	24%
7	Switzerland	14.9	2.9%	17%
8	Norway	14.1	24%	39%
10	Finland	13.7	13%	27%
11	Czech Republic	13.6	10%	22%
14	Denmark	12.8	7.8%	21%
15	Romania	12.8	10%	38%
17	Israel	12.1	13%	35%
18	Belgium	11.9	9.5%	19%
21	United Kingdom	11.6	6.7%	17%
25	Austria	10.4	5.9%	10%
26	Germany	10.2	15%	25%
27	Poland	9.8	12%	32%
31	Russia	9.4	5.2%	10%
32	Slovakia	9.4	15%	29%
33	Hungary	9.4	7.8%	26%
34	Portugal	9.2	14%	43%
38	Spain	8.9	9.3%	25%
44	France	7.5	6.5%	14%
53	United Arab Emirates	6.3	9.3%	47%
54	Turkey	6.3	8.7%	26%
56	Italy	6.1	9.6%	17%
90	South Africa	3.4	3.7%	29%

Figure 28: Average Connection Speed by EMEA Country

Global Rank	Country/Region	Q1 2015 Peak Mbps	QoQ Change	YoY Change
5	Romania	71.6	6.8%	32%
10	Israel	67.3	11%	17%
11	Sweden	62.8	9.7%	47%
13	Netherlands	61.5	9.0%	36%
15	Ireland	60.7	16%	57%
17	Switzerland	59.7	4.8%	33%
21	Belgium	53.5	3.6%	20%
23	Russia	53.1	7.0%	29%
24	Finland	53.0	12%	45%
26	Norway	51.9	22%	45%
27	United Kingdom	51.6	5.6%	22%
30	Hungary	50.4	11%	34%
32	Czech Republic	49.5	8.3%	28%
34	Denmark	47.8	8.5%	35%
35	Portugal	46.8	5.7%	27%
36	Germany	46.5	13%	31%
39	Spain	44.5	12%	38%
40	Poland	44.2	8.6%	35%
41	Slovakia	44.1	10%	37%
42	Austria	44.0	6.9%	22%
44	United Arab Emirates	41.8	-18%	29%
51	Turkey	37.4	11%	41%
55	France	35.1	11%	36%
68	Italy	30.3	12%	41%
112	South Africa	16.8	11%	68%

Figure 29: Average Peak Connection Speed by EMEA Country



Global Rank	Country/Region	% Above 4 Mbps	QoQ Change	YoY Change
3	Netherlands	95%	4.1%	7.4%
4	Israel	94%	1.4%	9.9%
5	Denmark	94%	1.2%	7.7%
6	Romania	93%	4.6%	7.0%
7	Switzerland	93%	0.4%	2.6%
11	Sweden	91%	4.3%	14%
13	Austria	91%	4.4%	8.8%
16	Belgium	89%	2.1%	11%
18	Finland	88%	5.9%	18%
20	Hungary	88%	7.3%	19%
21	Poland	87%	4.7%	20%
22	Czech Republic	87%	3.1%	5.3%
25	Germany	86%	7.5%	13%
30	Norway	86%	6.6%	37%
31	United Kingdom	85%	2.8%	5.5%
32	Russia	85%	3.9%	11%
34	Spain	83%	5.8%	12%
37	Portugal	80%	5.7%	14%
42	Turkey	76%	20%	24%
44	United Arab Emirates	75%	21%	73%
45	Slovakia	75%	10%	13%
48	Ireland	73%	6.9%	12%
49	France	73%	3.8%	6.5%
52	Italy	69%	13%	17%
89	South Africa	19%	0.3%	137%

Figure 30: 4 Mbps Broadband Adoption by EMEA Country

**6.3 EMEA 4 MBPS BROADBAND ADOPTION** / The first quarter saw modest positive growth in 4 Mbps broadband adoption across all surveyed EMEA countries, as seen in Figure 30. The Netherlands jumped from fourth place to first in the region this quarter, as its 4.1% quarterly growth pushed its adoption rate to 95%. Including the Netherlands, a total of seven countries (up from just four in the previous quarter) enjoyed adoption rates above 90%, meaning that more than 9 out of every 10 unique IP addresses in these countries connected to Akamai at average speeds of 4 Mbps or faster. Several additional countries were not far behind. The United Arab Emirates again led the group in quarterly growth rates, with a 21% increase over the fourth quarter, though Turkey was close behind with a 20% gain. Italy and Slovakia also saw double-digit percentage growth, with respective increases of 13% and 10%. On the other end of the spectrum, South Africa and Switzerland saw the lowest gains of 0.3% and 0.4%, respectively. South Africa once again had the lowest 4 Mbps adoption rate in the group by far, with less than one out of five IP addresses connecting to Akamai at the threshold speed. The remaining countries had much higher levels of adoption, ranging from 69% in Italy to 95% in the Netherlands.

Global Rank	Country/Region	% Above 10 Mbps	QoQ Change	YoY Change
2	Netherlands	61%	10%	41%
4	Romania	59%	8.4%	93%
5	Switzerland	59%	3.9%	30%
8	Sweden	52%	12%	55%
9	Belgium	51%	19%	47%
11	Denmark	49%	12%	40%
12	Israel	49%	21%	93%
13	Czech Republic	47%	15%	40%
15	Finland	47%	17%	38%
16	Norway	46%	29%	51%
20	United Kingdom	41%	8.3%	28%
21	Ireland	39%	18%	50%
25	Russia	33%	12%	20%
27	Poland	32%	23%	79%
28	Germany	31%	31%	53%
29	Hungary	31%	13%	69%
30	Portugal	31%	25%	161%
32	Austria	29%	11%	24%
33	Spain	27%	20%	71%
35	Slovakia	24%	19%	65%
42	France	18%	19%	47%
50	United Arab Emirates	9.2%	-0.6%	197%
52	Turkey	8.9%	-1.3%	178%
53	Italy	7.3%	28%	69%
65	South Africa	3.0%	16%	117%

Figure 31: 10 Mbps Broadband Adoption by EMEA Country

All of the surveyed EMEA countries saw 4 Mbps broadband adoption increase on a year-over-year basis. Despite its low adoption rate, South Africa once again led the pack in yearly growth, with a 136% increase from the first quarter of 2014. While none of the other surveyed EMEA countries saw speeds more than double, 15 had double-digit percentage growth rates — ranging from 11% increases in Russia and Belgium to 73% in the United Arab Emirates. Switzerland saw the smallest yearly increase, at 2.6%.

**6.4 EMEA 10 MBPS BROADBAND ADOPTION** / As Figure 31 shows, five of the surveyed EMEA countries — up from three in the fourth quarter — had more than half of their unique IP addresses connecting to Akamai at average speeds above 10 Mbps in the first quarter. Spurred by 12% and 19% quarterly gains, respectively, Sweden and Belgium joined the Netherlands, Romania, and Switzerland in this group. Denmark and Israel will likely follow suit in the near term, as both had 49% adoption rates in the first quarter. Four countries — South Africa, Italy, Turkey, and the United Arab Emirates — continued to see 10 Mbps broadband adoption rates below 10%.

Quarterly changes in adoption rates were mostly positive across EMEA, an improvement over the fourth quarter. Only two countries—Turkey and the United Arab Emirates—saw declines. The losses were very modest, at 1.3% and 0.6% respectively, and followed exceptionally large gains for both countries in the previous quarter. The remaining countries saw growth ranging from 3.9% in Switzerland to 31% in Germany, with 20 countries enjoying double-digit increases.

Year over year, all of the surveyed EMEA countries saw significant gains. The United Arab Emirates, Turkey, Portugal, and South Africa all repeated their fourth quarter feat of more than doubling 10 Mbps broadband adoption levels compared with the previous year. The United Arab Emirates saw the highest gain at 197%. Russia, with the lowest annual increase, still enjoyed a robust 20% growth rate.

**6.5 EMEA 15 MBPS BROADBAND ADOPTION** / In the first quarter, 12 of the surveyed EMEA countries had at least one of five IP addresses connecting to Akamai at average speeds above 15 Mbps, up from nine in the fourth quarter. As seen in Figure 32, Sweden

Global Rank	Country/Region	% Above 15 Mbps	QoQ Change	YoY Change
3	Sweden	35%	11%	70%
5	Netherlands	33%	12%	52%
6	Switzerland	32%	5.4%	39%
8	Norway	29%	32%	59%
10	Romania	28%	23%	166%
11	Finland	26%	20%	43%
12	Czech Republic	25%	20%	48%
13	Denmark	25%	18%	47%
15	United Kingdom	24%	12%	46%
16	Belgium	23%	24%	45%
19	Ireland	21%	33%	69%
20	Israel	20%	31%	118%
25	Poland	15%	34%	89%
26	Austria	14%	7.9%	17%
27	Portugal	14%	43%	270%
28	Germany	14%	45%	69%
29	Slovakia	13%	22%	67%
31	Russia	12%	10%	12%
32	Hungary	12%	14%	81%
33	Spain	11%	18%	87%
39	France	6.7%	21%	58%
42	Turkey	3.2%	-8.4%	292%
44	Italy	2.5%	15%	56%
45	United Arab Emirates	2.5%	16%	251%
49	South Africa	1.6%	20%	103%

Figure 32: 15 Mbps Broadband Adoption by EMEA Country

again led the group, seeing an 11% quarterly boost to a 35% adoption rate. The Netherlands and Switzerland were not far behind, and eight countries in total saw at least one in four IP addresses connect to Akamai at average speeds of at least 15 Mbps. Only five surveyed countries had adoption rates below 10%, down from eight in the fourth quarter. South Africa once again had the lowest adoption rate at 1.6%, despite a 20% quarterly increase. Unlike the mixed changes seen in the fourth quarter, only one surveyed EMEA country saw a loss in its 15 Mbps broadband adoption level in the first quarter. Turkey experienced an 8.4% decline, but still held on to much of its incredible 77% jump from the previous quarter. The remaining countries all posted increases, ranging from 5.4% in Switzerland to 45% in Germany.

Year over year, the surveyed EMEA countries again saw strong increases in 15 Mbps broadband adoption across the board. Six countries had adoption levels more than double compared with the first quarter of 2014, led by Turkey and Portugal—with 292% and 270% gains, respectively. An additional 11 countries posted yearly increases above 50%. Russia and Austria saw the smallest gains at 12% and 17%.

Just as in the fourth quarter, the first quarter saw a number of announcements across Europe that point to continuing growth in fast broadband connectivity, in line with the extremely encouraging numbers seen here. The Italian government approved a six-year, \$6.7 billion initiative to encourage development of high-speed connectivity throughout the country, with the goal of providing Internet speeds of 100 Mbps within cities and 30 Mbps or more in less populated regions.<sup>28</sup> In Wales, the government is collaborating with British telecommunications company BT to make 30 Mbps broadband capabilities available throughout the country, including in less-connected rural areas. At the beginning of March, BT announced that in the first two months of the year, more than 45,000 homes had gained access to fast broadband through the Superfast Cymru project.<sup>29</sup> BT also revealed plans to speed up its network using G.fast technology, which enables connectivity at up to 1 Gbps. BT is currently piloting G.fast with a full commercial deployment planned for 2016 and 2017.<sup>30</sup>









# [SECTION]<sup>7</sup> MOBILE CONNECTIVITY

The source data in this section encompasses usage from smartphones, tablets, computers, and other devices that connect to the Internet through mobile network providers. In addition, this section includes insight into mobile voice and data traffic trends contributed by Ericsson, a leading provider of telecommunications equipment and related services to mobile and fixed operators globally.

Starting with the *First Quarter, 2014 State of the Internet Report*, we changed the connection speed data presented within this section. Prior to that time, the report included data for a selected set of providers with a minimum of 1,000 unique IP addresses connecting to Akamai during the quarter, where Akamai believed that the entire autonomous system (AS) was mobile. As discussed in the past, Akamai is now leveraging mobile device identification data to greatly expand the number of networks that are considered to be mobile. However, the number of networks now identified as mobile is significantly larger than could be manageably published within the report. As such, similar to the methodology employed

for Sections 2–6 of the report, we are now publishing mobile connectivity metrics aggregated at a country/region level. This section also uses the 25,000 unique IP address threshold to qualify countries/regions for inclusion.

In addition, as noted in last quarter's report, we have recorded unusually high peak mobile speeds — of well over 300 Mbps — in Saudi Arabia and Kuwait. These speeds are not realistic for today's mobile networks and are most likely due to the heavy use of proxies by mobile network providers. The connection speeds

recorded for these two countries are more likely to be indicative of the speeds achieved between Akamai and the proxies (residing in data centers) rather than speeds achieved between Akamai and the mobile devices themselves. We have therefore excluded these two countries from our analyses in this section.

**7.1 CONNECTION SPEEDS ON MOBILE NETWORKS** / In the first quarter of 2015, 62 countries/regions around the world qualified for inclusion in the mobile section, up from 50 in the fourth quarter of 2014. Figure 33 shows that across these countries/

Country/Region	Q1 2015 Avg. Mbps	Q1 2015 Peak Mbps	% Above 4 Mbps
<b>AFRICA</b>			
Egypt	2.6	15.8	9.6%
Morocco	4.8	51.6	55%
South Africa	2.5	10.4	17%
<b>ASIA PACIFIC</b>			
Australia	7.6	149.3	96%
China	4.7	15.8	56%
Hong Kong	6.5	32.5	64%
India	2.8	15.9	19%
Indonesia	1.7	8.2	3.0%
Iran	1.8	10.5	0.6%
Israel	5.5	90.1	72%
Japan	7.7	126.0	75%
Kazakhstan	2.3	12.4	0.7%
Malaysia	2.7	22.1	12%
Nepal	4.0	8.4	41%
New Caledonia	1.7	15.4	3.6%
New Zealand	7.0	86.4	74%
Oman	3.0	22.5	4.2%
Pakistan	1.9	12.2	7.2%
Singapore	7.5	116.4	82%
South Korea	8.8	50.1	63%
Sri Lanka	3.4	32.1	15%
Syrian Arab Republic	2.2	14.7	6.3%
Taiwan	5.1	38.0	62%
Thailand	2.5	105.4	2.0%
United Arab Emirates	4.8	77.4	91%
Vietnam	1.3	22.7	0.4%
<b>EUROPE</b>			
Austria	6.3	27.4	72%
Belgium	5.8	36.7	80%
Croatia	2.9	12.0	3.7%
Czech Republic	5.5	20.4	63%

Figure 33: Average and Average Peak Connection Speeds, 4 Mbps Broadband Adoption for Mobile Connections by Country/Region

Country/Region	Q1 2015 Avg. Mbps	Q1 2015 Peak Mbps	% Above 4 Mbps
Denmark	10.0	48.0	98%
France	7.9	48.0	76%
Germany	5.7	69.4	35%
Hungary	3.7	24.6	26%
Iceland	5.0	31.7	70%
Ireland	7.4	44.5	72%
Italy	6.1	53.7	72%
Lithuania	4.7	27.4	54%
Moldova	5.1	28.2	44%
Netherlands	5.5	27.5	60%
Norway	6.9	29.3	86%
Poland	5.6	31.1	76%
Russia	7.5	50.5	70%
Slovakia	8.4	40.8	85%
Slovenia	5.6	23.2	77%
Spain	7.7	57.1	76%
Sweden	8.9	44.6	97%
Turkey	7.7	51.6	43%
Ukraine	8.1	30.4	90%
United Kingdom	20.4	90.9	95%
<b>NORTH AMERICA</b>			
Canada	5.3	46.7	66%
El Salvador	3.0	17.7	16%
Puerto Rico	9.6	42.4	89%
United States	4.0	17.8	27%
<b>SOUTH AMERICA</b>			
Argentina	1.8	11.1	8.9%
Bolivia	2.0	10.7	0.9%
Brazil	2.5	20.7	7.2%
Chile	2.5	16.8	8.5%
Colombia	2.5	14.1	6.4%
Paraguay	4.1	24.1	36%
Uruguay	5.4	32.0	57%
Venezuela	7.0	25.9	97%



regions, the United Kingdom once again had the fastest average mobile connection speed at 20.4 Mbps, a 28% increase from the previous quarter. Denmark was again in second place, at 10.0 Mbps, roughly half the speed of the United Kingdom. Vietnam had the lowest average connection speed, at 1.3 Mbps. New Caledonia, which was in the last position in the fourth quarter, saw its average connection speed increase to 1.7 Mbps.

While the United Kingdom and Denmark were the only countries with an average mobile connection speed exceeding the 10 Mbps broadband threshold, a total of 40 countries achieved average speeds at or above the 4 Mbps broadband level, up significantly from 30 countries in the fourth quarter. Within the individual continental regions, the following countries had the highest average mobile connection speeds:

- **Africa:** Morocco, 4.8 Mbps
- **Asia Pacific:** South Korea, 8.8 Mbps
- **Europe:** United Kingdom, 20.4 Mbps
- **North America:** Puerto Rico, 9.6 Mbps
- **South America:** Venezuela, 7.0 Mbps

As has been seen in the prior quarters, average peak mobile connection speeds spanned an extremely broad range in the first quarter, from 149.3 Mbps in Australia to 8.2 Mbps in Indonesia. A total of four countries—Australia, Japan, Singapore, and Thailand—posted average peak speeds above 100 Mbps, up from just two countries in the fourth quarter. Perhaps due in part to rollouts of higher-speed mobile technologies like LTE-A, the successor to 4G LTE, a total of 15 countries had average peak speeds above 50 Mbps—a large increase from just four in the previous quarter. All but two countries—Nepal and Indonesia—saw average peak mobile connection speeds above 10 Mbps. Within the individual continental regions, the following countries had the highest average peak mobile connection speeds:

- **Africa:** Morocco, 51.6 Mbps
- **Asia Pacific:** Australia, 149.3 Mbps
- **Europe:** United Kingdom, 90.9 Mbps
- **North America:** Canada, 46.7 Mbps
- **South America:** Uruguay, 32.0 Mbps

Similar to the global and regional connectivity sections of this report, we are also including insight into 4 Mbps broadband adoption levels for mobile connectivity—that is, the percentage of unique IP addresses connecting to Akamai from mobile network providers within the qualifying countries/regions at average speeds of over 4 Mbps. In the first quarter, Denmark led the pack with a tremendous 98% adoption rate, followed closely by Sweden, Venezuela, Australia, and the United Kingdom. At the other end of the spectrum, Vietnam, Iran, Kazakhstan, and Bolivia all had adoption rates below 1%. New Caledonia, which had less than 1% adoption in the fourth quarter of 2014, grew to a 3.6% adoption

rate in the first quarter of 2015. Within the individual continental regions, the following countries/regions had the highest mobile broadband adoption rates:

- **Africa:** Morocco, 55%
- **Asia Pacific:** Australia, 96%
- **Europe:** Denmark, 98%
- **North America:** Puerto Rico, 89%
- **South America:** Venezuela, 97%

**7.2 MOBILE BROWSER USAGE DATA** / In June 2012, Akamai launched the “Akamai IO” destination site (<http://www.akamai.com/io>), with an initial data set that highlighted browser usage across PCs and other connected devices connecting to Akamai via fixed and mobile networks. The data and graphs below are derived from Akamai IO.

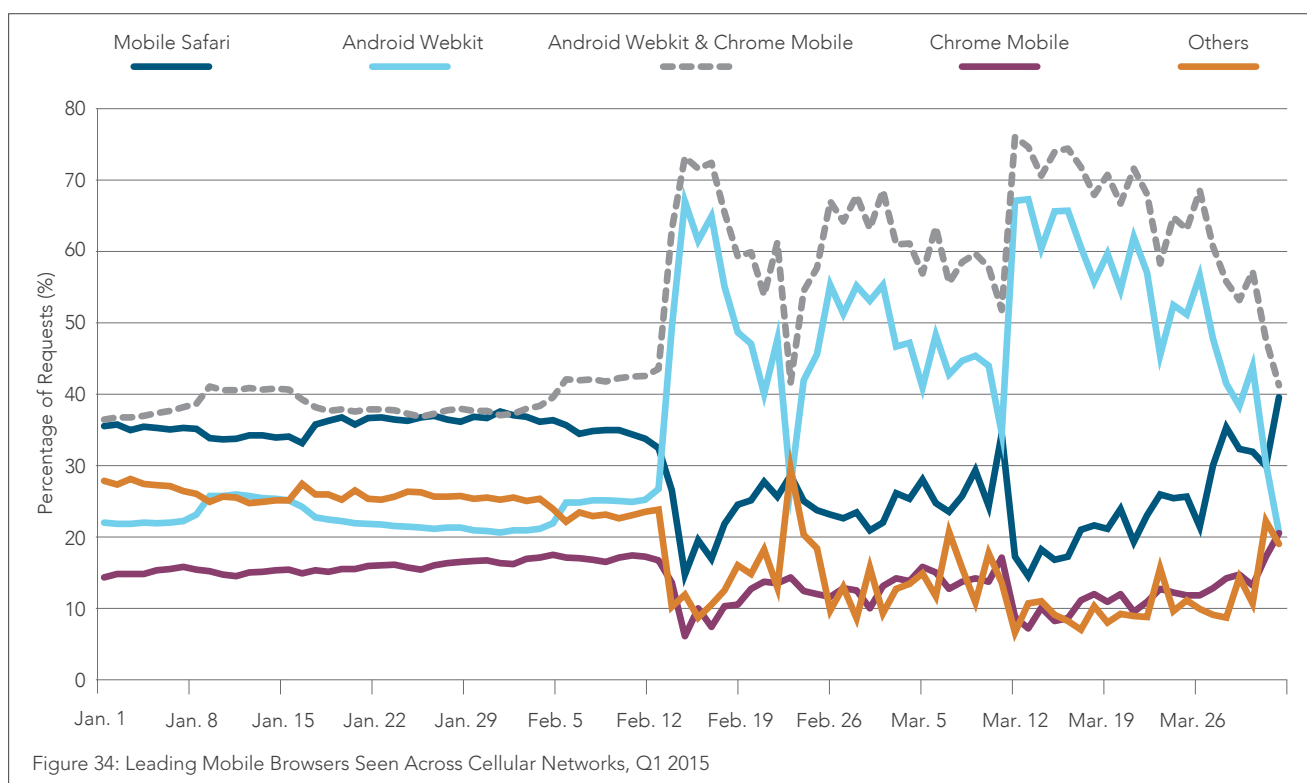
Figure 34 illustrates mobile browser usage by users identified to be on cellular networks in the first quarter of 2015. Whereas in previous quarters, we focused on the usage of Android Webkit and Apple Mobile Safari, with all other browsers designated as “Others” in the graph, beginning with the *Fourth Quarter, 2014 State of the Internet Report* we also broke out metrics for mobile Chrome (which was previously bundled into “Others”). As of Android version 4.4 (KitKat), Chrome has replaced Webkit as the default Android browser engine, so when comparing Android versus iOS platforms, we combine metrics from Android Webkit and Chrome for mobile to calculate an Android platform number. We expect that over time, as older Android versions are retired, Webkit traffic will decline and Chrome traffic will increase.

As seen in Figure 34, beginning around February 12 we began to see unusually high volatility in this data. We determined that data reflecting activity after this date was affected by a data processing issue that rendered it inaccurate. Although the issue was fixed after the end of the quarter, our analysis of cellular mobile browser usage in the first quarter only considers data through February 11, 2015.

As the graph shows, at the start of the quarter, Mobile Safari led Android Webkit by about 14 percentage points, and Webkit led Chrome by about 8 percentage points. Although trend lines are hard to read over the short term, it appears that Mobile Safari lost a little ground while Chrome gained some over the first six weeks of the first quarter, with Webkit staying fairly steady. On February 11, Mobile Safari’s lead over Android Webkit had dropped to nine percentage points, while Webkit’s lead over Chrome had stayed steady at around eight percent—but, again, it is difficult to point to a clear trend line over such a short period.

In comparing iOS versus Android platforms, we saw the platforms running fairly neck-and-neck, though temporary gaps seem to appear from time to time. Although Android had a nine-point lead on February 11, it is not clear whether this is indicative of a trend or just the middle of a temporary fluctuation in the data. Overall, iOS comprised about 36% of requests from January 1 through February





11 while Android was responsible for 39%, with the gap between them widening by less than 2 percentage points compared with the fourth quarter.

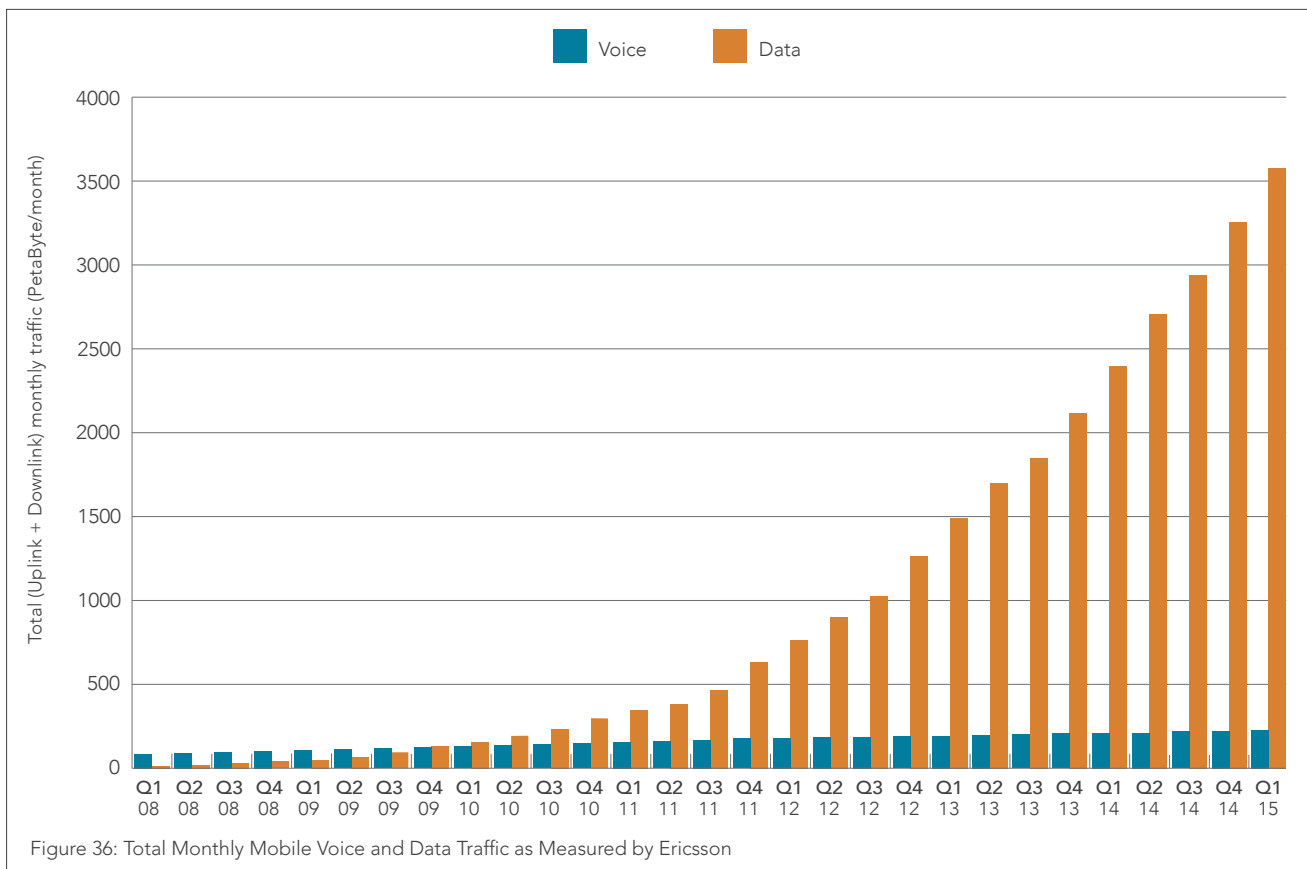
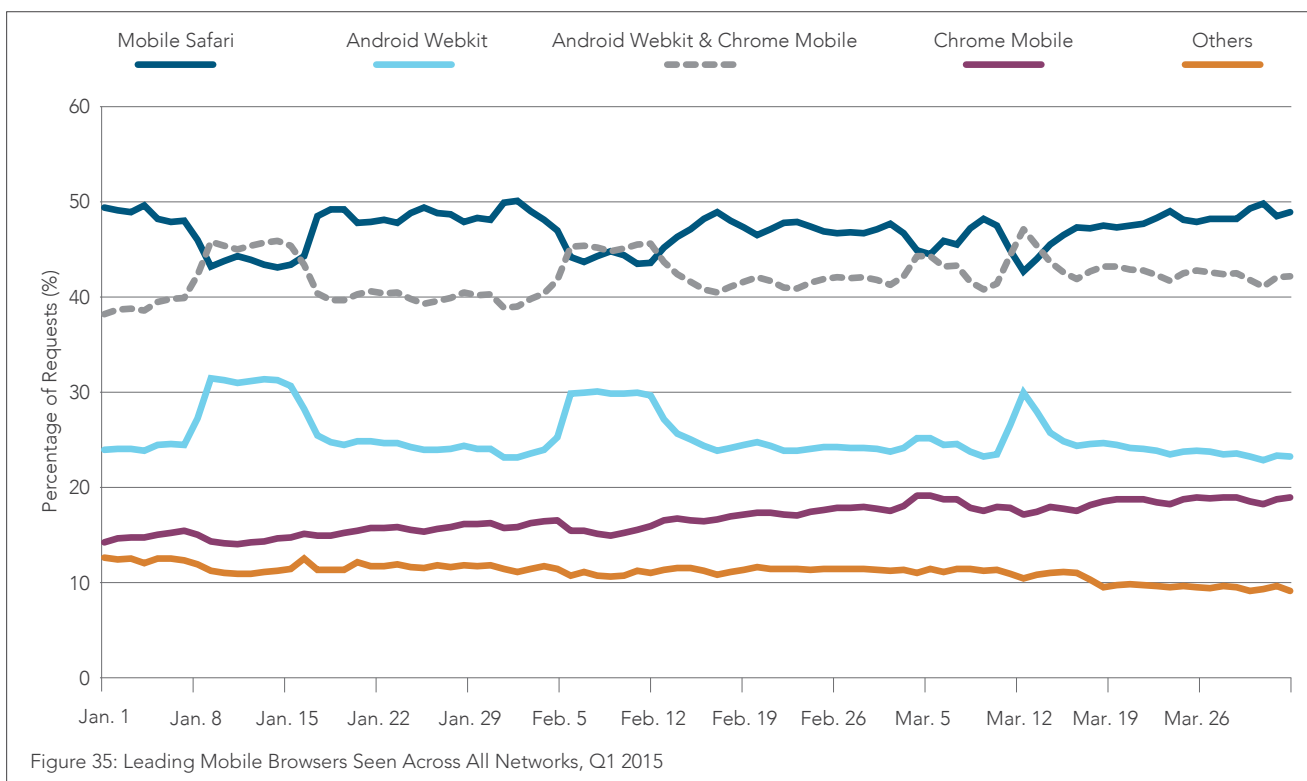
Expanding the set of data to all networks (not just those defined as cellular), we see a much wider gap between Mobile Safari and Android Webkit, as shown in Figure 35. At the start of the quarter, Mobile Safari usage was roughly 25 percentage points higher than Android Webkit, and though this gap narrowed at times, it remained fairly consistent, ending at roughly the same place at the end of the quarter. The gap between Android Webkit and Chrome Mobile began the quarter at 10% but narrowed to roughly 4% as Chrome continued to pick up speed. Overall, the ios platform held an 11 percentage point lead over Android at the beginning of the quarter, narrowing to about 7 percentage points at quarter end. However, it is unclear whether this is indicative of a significant trend, as the differences between the platforms appear to continually fluctuate several times over the course of the quarter. Averaged across the entire first quarter, ios accounted for about 47% of requests, one percentage point less than in the fourth quarter, while Android accounted for roughly 42% of requests, two percentage points more than the previous quarter.

**7.3 MOBILE TRAFFIC GROWTH OBSERVED BY ERICSSON** / In mobile networks, the access medium (spectrum) is being shared by different users in the same cell. It is important to understand traffic volumes and usage patterns in order to enable a good customer experience. Ericsson's presence in more than 180 countries and its customer base representing more than 1,000 networks enables it to

measure mobile voice and data volumes. The result is a representative base for calculating world total mobile traffic in 2G, 3G, and 4G networks (not including DVB-H, WiFi, and Mobile WiMax).


These measurements have been performed for several years. It is important to note that the measurements of data and voice traffic in these networks (2G, 3G, 4G/LTE) around the world show large differences in traffic levels between markets and regions and also between operators due to their different customer profiles.

Figure 36 shows total global monthly data and voice traffic. It depicts a strong increase in data traffic growth with moderating rate of growth and almost flat voice traffic development. The number of mobile data subscriptions is increasing rapidly and driving growth in data traffic along with a continuous increase in the average data volume per subscription. Data traffic grew around 12 percent between the fourth quarter of 2014 and the first quarter of 2015.









# [SECTION]<sup>8</sup>

## SITUATIONAL PERFORMANCE

In June 2013, Akamai announced<sup>31</sup> the latest release of Ion, a solution designed to meet the unique challenges of optimizing both the desktop and mobile web experience. One component of Ion is a capability known as Real User Monitoring (RUM), which takes passive performance measurements from actual users of a web experience in order to provide insight into performance across devices and networks. RUM is a complementary capability to synthetic testing, and the two can and should be used in conjunction to gain a comprehensive picture of user experience.

Note that there are a few different RUM measurement methodologies. The first is using what is known as navigation timing<sup>32</sup> (or “navtiming”), which allows JavaScript to collect page load time component information directly from the user agent (browser) through an API. The second is to use a framework for timing web pages, like Web Episodes,<sup>33</sup> that leverages JavaScript events such as “onload.” While navtiming is the preferred methodology for collecting RUM measurements, not every user agent supports it at this time.<sup>34</sup> Apple’s Safari browser only

began supporting it in version 8 on OS X and does not yet support it for iOS. Android first added navtiming support in version 4.0 (“Ice Cream Sandwich”) of the operating system, and Microsoft’s Internet Explorer began support in version 9 of the browser.

Figure 37 shows average page load times for users on both broadband and mobile connections, based on RUM data collected by Akamai during the first quarter of 2015. The underlying data was collected with navtiming; therefore, as noted above, it does not include measurements from users of Safari on iOS devices or older versions of Android, Internet Explorer, or Safari on OS X. The countries included within the table were selected based on several criteria, including the availability of measurements from users on networks identified as mobile and those identified as broadband as well as having more than 90,000 measurements from mobile networks during the first quarter data collection period. Note that these criteria are subject to change in the future as we expand the scope of RUM measurements included within the *State of the Internet Report*.

In reviewing the average page load time measurements for broadband connections shown in Figure 37, we find the lowest values (i.e. fastest page load times) in Turkey, South Korea, and Bolivia. Turkey’s average page load time was a stunning 857 ms, while South Korea and Bolivia both had very fast average load times of around 1.6 seconds. The country with the slowest broadband page load time was again Brazil, where pages took 6.1 seconds to load on average — roughly seven times as long Turkey. Sri Lanka and Singapore rounded out the bottom three in terms of broadband measurements, both with load times of approximately 5.0 seconds each. Note that these measurements do not just reflect broadband network speeds, but are also influenced by factors such as average page weight.

Looking at mobile networks, three countries — Turkey, Bolivia, and Indonesia — posted surprisingly fast, sub-second average page load times, at 602 ms, 670 ms, and 689 ms, respectively. Note again that these measurements are affected by average page weight as well as mobile network speeds. Colombia and Thailand were the next fastest countries, seeing average mobile page load times of 1.0 and 1.1 seconds, respectively. At the other end of the spectrum, Singapore, Taiwan, and Canada had the highest average load times for mobile connections, at 10.7 seconds, 9.6 seconds, and 8.9 seconds, respectively. These numbers are all higher than in the fourth quarter, which may be a result of more content-rich pages being downloaded over mobile devices.

In comparing the average broadband page load times to those observed on mobile connections, we find significant variance in what we have dubbed the “mobile penalty” — that is, the ratio of average page load times on mobile connections versus average load times on broadband connections. As noted previously, this ratio should not be taken as a pure comparison of mobile versus broadband network speeds, as these speeds are just one factor in the

overall user experience; average page weight — which is dependent both on the type of content requested as well as potential mobile-specific content optimizations — is another significant factor.

In the first quarter, the mobile penalty across surveyed countries ranged from 0.3x in Indonesia to 3.0x in Canada, a broader variance than was seen in the fourth quarter. Of the 46 countries/regions surveyed, 21 had a mobile penalty lower than 1.0x, meaning that average page load times were faster on mobile connections than on broadband connections. Indonesia, Bolivia, and Thailand all had average mobile page load times that were less than half their average broadband page load times. On the other end of the spectrum, Singapore, Hong Kong, and Taiwan joined Canada in having the highest mobile penalties, as all had pages load at least twice as fast, on average, over broadband connections compared with mobile connections.

As more customers integrate Akamai’s RUM capabilities and as more platforms support the navigation timing API, we expect that we will be able to expand the scope of the Situational Performance measurements presented within future issues of the *State of the Internet Report*.

Region	Country/ Region	Avg. Page Load Time Broadband (ms)	Avg. Page Load Time Mobile (ms)	Mobile Penalty
APAC	Australia	4703	5363	1.1x
APAC	China	2347	2588	1.1x
APAC	Hong Kong	2077	4475	2.2x
APAC	India	3512	5676	1.6x
APAC	Indonesia	2194	689	0.3x
APAC	Japan	1767	2594	1.5x
APAC	Kuwait	2577	2079	0.8x
APAC	Malaysia	4143	3790	0.9x
APAC	Singapore	4962	10680	2.2x
APAC	South Korea	1614	1976	1.2x
APAC	Sri Lanka	4977	5220	1.0x
APAC	Taiwan	4361	9626	2.2x
APAC	Thailand	2466	1100	0.4x
EMEA	Austria	2020	2226	1.1x
EMEA	Czech Republic	2090	2333	1.1x
EMEA	Denmark	2189	2821	1.3x
EMEA	Egypt	2745	1816	0.7x
EMEA	France	2885	2566	0.9x
EMEA	Germany	2194	1118	0.5x
EMEA	Greece	3045	4166	1.4x
EMEA	Hungary	1930	2052	1.1x
EMEA	Ireland	3057	4296	1.4x
EMEA	Italy	2826	2758	1.0x

Region	Country/ Region	Avg. Page Load Time Broadband (ms)	Avg. Page Load Time Mobile (ms)	Mobile Penalty
EMEA	Morocco	2496	1801	0.7x
EMEA	Netherlands	2078	2245	1.1x
EMEA	Poland	1979	2269	1.1x
EMEA	Romania	1943	1483	0.8x
EMEA	Slovakia	2045	2251	1.1x
EMEA	South Africa	4575	4255	0.9x
EMEA	Spain	2324	1520	0.7x
EMEA	Sweden	1834	2670	1.5x
EMEA	Switzerland	2266	2012	0.9x
EMEA	Turkey	857	602	0.7x
EMEA	Ukraine	2468	1956	0.8x
EMEA	United Kingdom	3358	4668	1.4x
N. America	Canada	2978	8867	3.0x
N. America	El Salvador	2907	2096	0.7x
N. America	United States	2599	3722	1.4x
S. America	Argentina	3350	1920	0.6x
S. America	Bolivia	1619	670	0.4x
S. America	Brazil	6106	7168	1.2x
S. America	Chile	2298	2428	1.1x
S. America	Colombia	2210	1028	0.5x
S. America	Paraguay	3215	2912	0.9x
S. America	Uruguay	3049	2712	0.9x
S. America	Venezuela	4554	2484	0.5x

Figure 37: Average Page Load Times Based on Real User Monitoring









# [SECTION]<sup>9</sup> INTERNET DISRUPTIONS +EVENTS

Internet disruptions are unfortunately still all too common — occurring in some countries/regions on a frequent basis. These disruptions may be accidental (backhoes or ship anchors severing buried fiber), natural (hurricanes or earthquakes), or political (governments shutting off Internet access in response to unrest). Because Akamai customer content is consumed by users around the world, the results of these disruptions — whether brief or spanning multiple days — is evident in the levels of Akamai traffic delivered to the affected country/region.

The content presented in this section provides insights into how Akamai traffic was impacted by major Internet disruptions and events during the first quarter of 2015.

**9.1 COLOMBIA** / At 11:40 P.M. UTC on January 10, Akamai saw a sudden 50% drop in traffic to Colombia, as seen in Figure 38. Traffic slowly recovered over the next few hours, settling back into the country's more typical, cyclical daily usage pattern around 3:00 A.M. UTC on January

11. The outage affected customers of major telecommunications providers Tigo Colombia–UNE Telecomunicaciones in the capital city of Bogotá as well as cities along Colombia’s Caribbean coast, including Barranquilla and Cartagena.<sup>35</sup> After the Colombian government launched an investigation, it was reported that a break in the provider’s fiber-optic network—likely caused by vandalism—caused the disruptions.<sup>36</sup>

**9.2 DEMOCRATIC REPUBLIC OF THE CONGO** / At midnight UTC on January 20, Akamai-served traffic to the Democratic Republic of Congo (DRC) dropped very suddenly to roughly 10% of its normal levels after the government of Congo shut down all Internet service to the capital city of Kinshasa, reportedly in an attempt to contain protests in opposition to President Joseph Kabila.<sup>37, 38</sup> The protests led to several violent clashes with police, leaving at least 45 people dead and many more injured. This marked the second time in four years that the DRC government has reportedly blocked access to the Internet and social media to prevent coordination of public protests.<sup>39</sup>

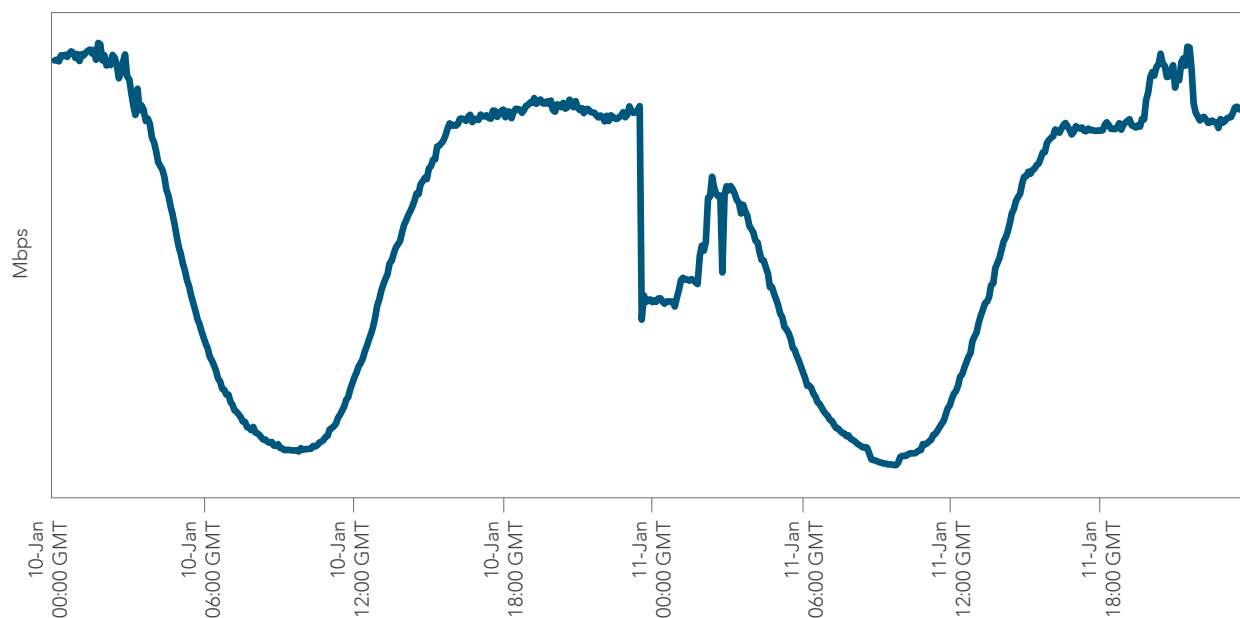


Figure 38: Akamai Traffic Served to Colombia, January 10–11, 2015

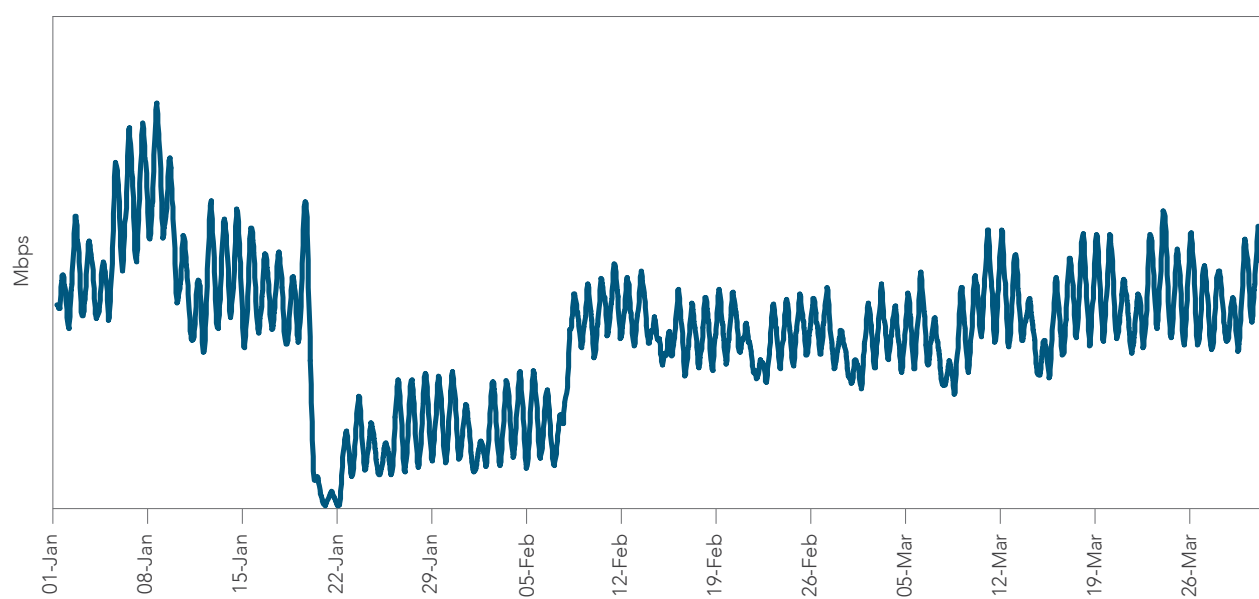


Figure 39: Akamai Traffic Served to Democratic Republic of the Congo, January 1–March 31, 2015

As seen in Figure 39, Akamai saw traffic to the DRC stay at extremely depressed levels for the next two days before recovering somewhat the morning of January 22, at which point the DRC government most likely restored access for government agencies and banks while continuing to block public access.<sup>40</sup> During this time, DRC Internet traffic settled back into a more typical daily usage pattern, but remained at levels that were roughly one-third to one-half of normal. Traffic to the DRC did not return to its usual levels until February 8, almost three weeks after the initial shut down.

**9.3 GABON** / Gabon experienced two Internet failures in March 2015. The first of these, on March 9, is depicted in Figure 40, which shows a large drop in Akamai-delivered traffic to Gabon lasting for over 15 hours—from 2:15 A.M. to 5:40 P.M. UTC. Dyn Research, the Internet monitoring arm of Internet performance company Dyn, noted that 69% of the routed networks in Gabon experienced outages during this time, while the subsequent disruption on March 12 saw outages among 75% of the routed networks.<sup>41</sup> These outages were reportedly caused by striking workers, as Gabon Telecom staff protested work conditions after the company's privatization.<sup>42</sup>

**9.4 SYRIA** / As seen in Figure 41, Syria also experienced multiple Internet disruptions in the first quarter. On January 26, Akamai saw traffic to Syria drop momentarily to roughly 15% of previous levels at 8:50 A.M. UTC, followed by a more sustained drop from 11:35 A.M. to 12:50 P.M. UTC as well as a smaller dip in traffic levels later that afternoon. Akamai traffic to Syria again dropped to about 15% of normal levels for about an hour and a half on February 26 between 2:10 A.M. and 3:40 A.M. UTC. Although the cause is unclear, Dyn Research noted that two-thirds of Syria's routed networks were knocked out at this time.<sup>43</sup>

**9.5 VANUATU** / In early March, the South Pacific island of Vanuatu experienced devastation as category-five tropical cyclone Pam battered the country with torrential rains, heavy flooding, and sustained winds of more than 150 mph. As shown in Figure 42, the cyclone caused severe Internet disruptions as well. On March 13, when Pam hit the island, Akamai saw traffic levels to the island drop suddenly around 11:30 A.M. UTC. RIPE, the Regional Internet Registry for this region, noted that Telecom Vanuatu went offline at this time.<sup>44</sup> Traffic levels stayed extremely low for more than 36 hours before slowly beginning to recover; it took about 10 days total for traffic to gradually climb back up to normal levels. Despite the immense destruction, Pam took fewer than 20 lives, thanks in part to use of an SMS warning system that allowed much of the population to be alerted of the approaching cyclone.<sup>45</sup>

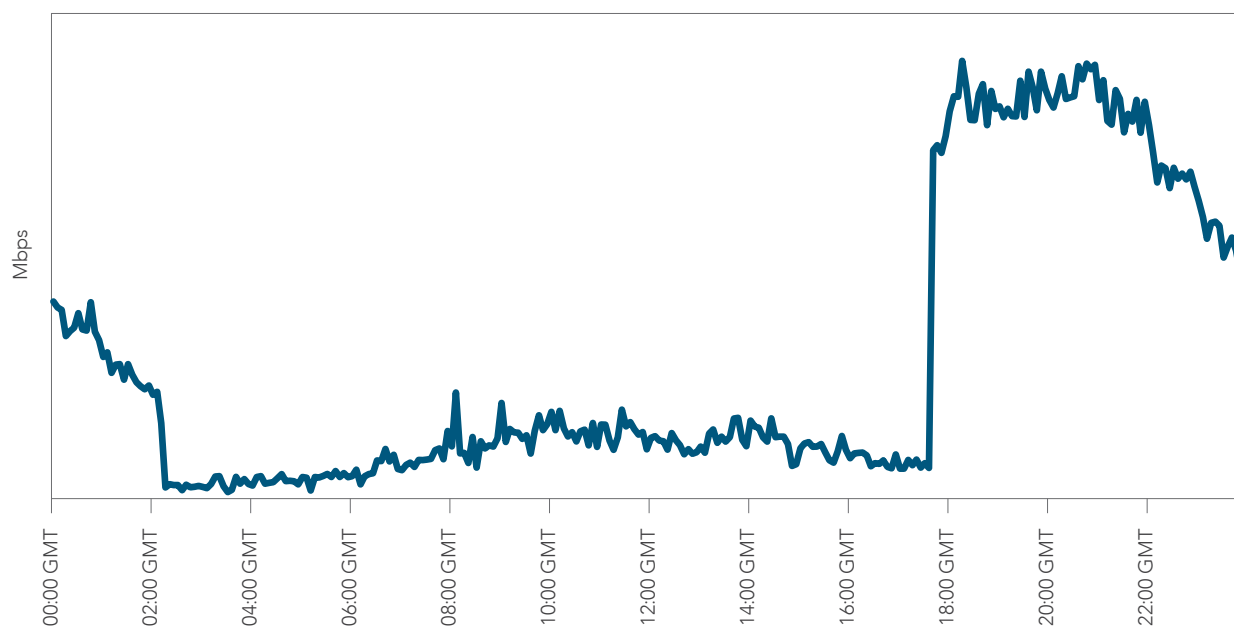
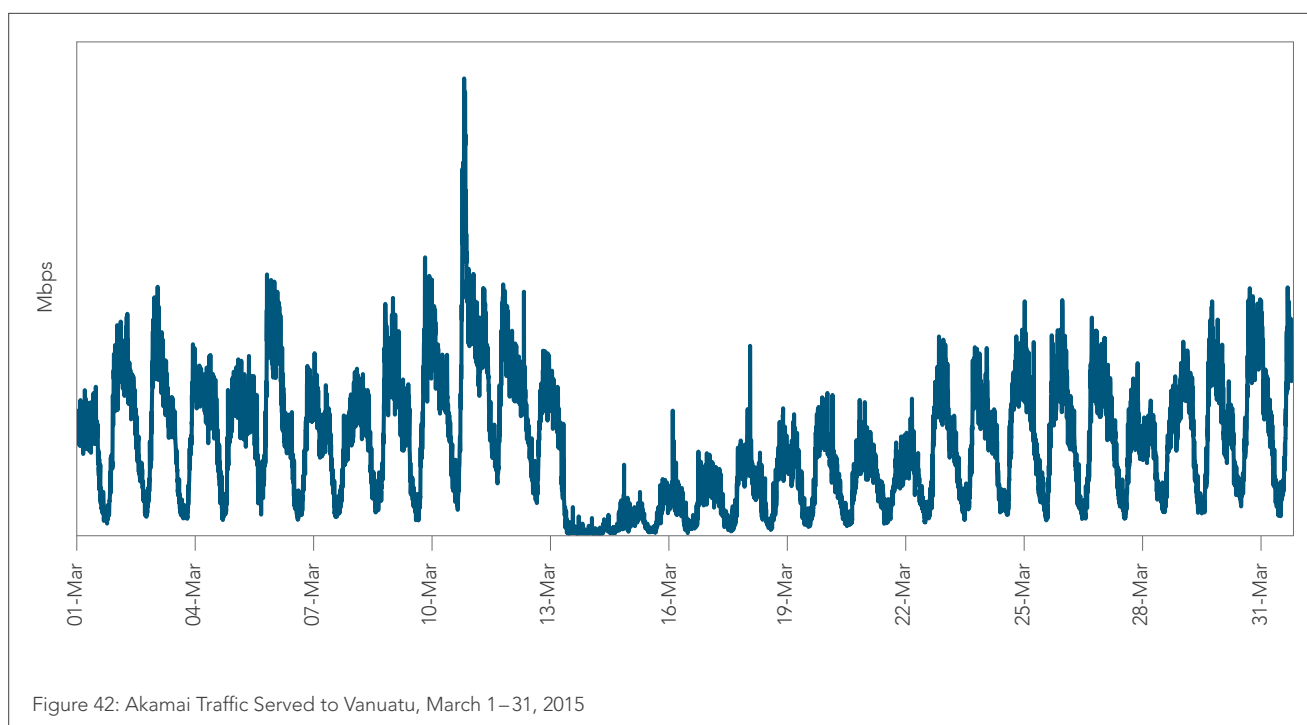
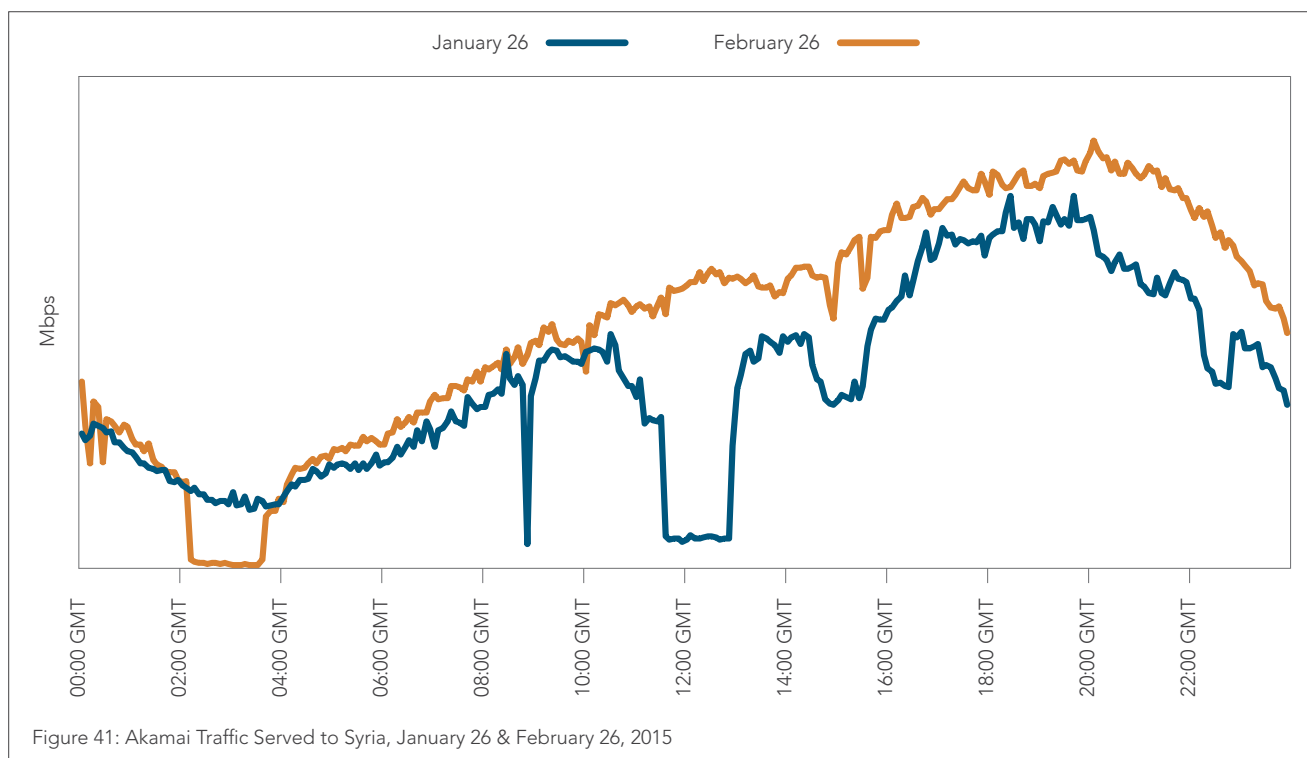


Figure 40: Akamai Traffic Served to Gabon, March 9, 2015





Region	Unique IPv4 Addresses	Average Connection Speed (Mbps)	Peak Connection Speed (Mbps)	% Above 4 Mbps	% Above 10 Mbps	% Above 15 Mbps
AMERICAS						
Argentina	7,523,208	4.6	24.5	41%	7.1%	1.2%
Bolivia	575,653	1.5	12.0	2.4%	0.2%	0.1%
Brazil	48,167,070	3.4	24.2	31%	2.2%	0.5%
Canada	14,604,346	11.6	49.5	87%	44%	20%
Chile	4,003,252	5.7	36.7	62%	9.1%	1.8%
Colombia	11,745,257	4.5	28.7	46%	4.7%	1.1%
Costa Rica	488,514	3.0	14.6	17%	0.9%	0.4%
Ecuador	934,559	4.1	22.9	32%	3.3%	0.7%
Mexico	13,659,252	4.9	27.8	53%	4.7%	1.2%
Panama	479,840	3.2	19.0	21%	1.1%	0.3%
Paraguay	163,522	1.4	11.5	1.9%	0.1%	<0.1%
Peru	1,033,567	4.5	25.9	50%	2.5%	0.5%
United States	151,820,880	11.9	53.3	76%	44%	22%
Uruguay	1,435,876	6.7	51.3	61%	17%	4.4%
Venezuela	4,187,947	1.5	10.7	2.1%	0.2%	0.1%
ASIA PACIFIC						
Australia	9,249,481	7.6	40.8	71%	17%	6.9%
China	127,097,179	3.7	19.4	32%	1.5%	0.3%
Hong Kong	3,140,699	16.7	92.6	92%	60%	39%
India	18,065,584	2.3	17.4	9.9%	1.8%	0.7%
Indonesia	6,306,387	2.2	17.5	6.0%	0.4%	0.1%
Japan	44,487,590	15.2	70.1	89%	56%	33%
Malaysia	2,157,348	4.3	31.5	43%	3.8%	1.0%
New Zealand	2,077,113	8.4	36.7	86%	21%	6.9%
Philippines	1,393,252	2.8	20.3	10%	0.6%	0.2%
Singapore	1,734,851	12.9	98.5	84%	47%	24%
South Korea	22,640,746	23.6	79.0	96%	77%	58%
Sri Lanka	244,305	4.8	30.8	65%	1.5%	0.4%
Taiwan	11,160,423	10.5	71.5	89%	35%	15%
Thailand	3,356,691	7.4	50.6	86%	14%	4.4%
Vietnam	5,451,534	3.2	21.3	25%	0.4%	0.1%
EUROPE, MIDDLE EAST & AFRICA						
Austria	3,163,439	10.4	44.0	91%	29%	14%
Belgium	5,092,116	11.9	53.5	89%	51%	23%
Czech Republic	1,937,282	13.6	49.5	87%	47%	25%
Denmark	2,994,964	12.8	47.8	94%	49%	25%
Finland	2,846,585	13.7	53.0	88%	47%	26%
France	29,923,918	7.5	35.1	73%	18%	6.7%
Germany	35,629,875	10.2	46.5	86%	31%	14%
Hungary	2,872,769	9.4	50.4	88%	31%	12%
Ireland	2,083,146	17.4	60.7	73%	39%	21%
Israel	2,417,920	12.1	67.3	94%	49%	20%
Italy	18,153,681	6.1	30.3	69%	7.3%	2.5%
Netherlands	9,260,974	15.3	61.5	95%	61%	33%
Norway	3,986,633	14.1	51.9	86%	46%	29%
Poland	8,469,005	9.8	44.2	87%	32%	15%
Portugal	3,752,205	9.2	46.8	80%	31%	14%
Romania	3,381,558	12.8	71.6	93%	59%	28%
Russia	19,216,729	9.4	53.1	85%	33%	12%
Slovakia	1,100,324	9.4	44.1	75%	24%	13%
South Africa	5,895,232	3.4	16.8	19%	3.0%	1.6%
Spain	15,339,703	8.9	44.5	83%	27%	11%
Sweden	6,145,252	15.8	62.8	91%	52%	35%
Switzerland	3,807,078	14.9	59.7	93%	59%	32%
Turkey	9,145,444	6.3	37.4	76%	8.9%	3.2%
United Arab Emirates	1,490,943	6.3	41.8	75%	9.2%	2.5%
United Kingdom	30,556,750	11.6	51.6	85%	41%	24%

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